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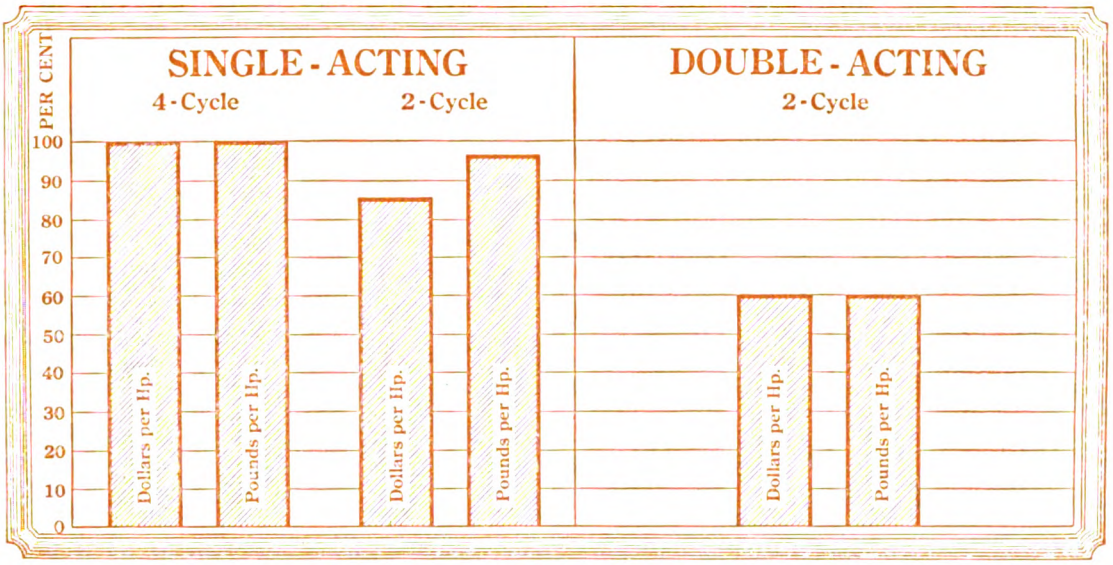
Write for descriptive literature.



These figures taken from public letting, U. S. Shipping Board. They represent engines built to same specifications

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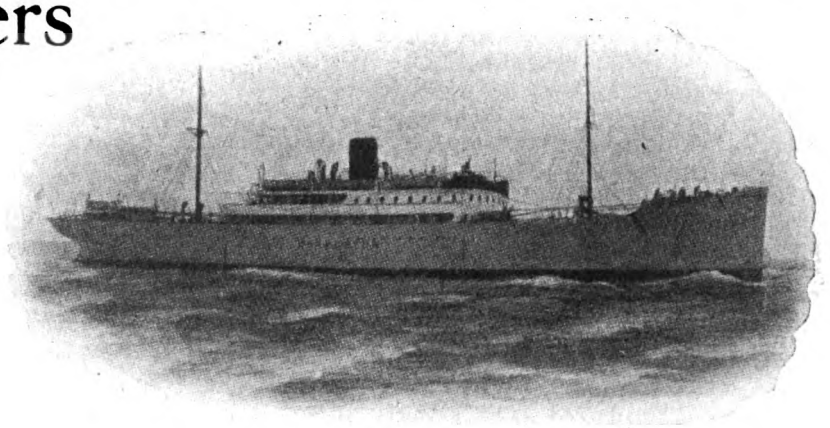
United States Must Have Much Better Ships Than Foreigners

Latest Products of Overseas Yards Highly Efficient



Twin screw passenger and mail motorship Parkeston recently completed—now in service between Harwich England and Esbjerg, Denmark

U. S. Cannot Compete With Old Shipping Board Vessels

BY A. H. JANSSON

NO AMERICAN steamship owner even though his ships are engaged in the coastwise trade or other services more or less protected from foreign competition can afford to neglect to study the rapid developments going on abroad in modernizing merchant fleets. At the present time the United States shipping board has under way a program for the conversion of existing inefficient steam cargo vessels to motor ships. But how will these ships when completed compare with the latest products of the shipbuilders' art in foreign countries? To answer this question it is of vital importance to take note of what is being done on the other side. In motive power and its arrangements, in auxiliaries, in cargo handling, in the layout of quarters, in general design throughout and overall efficiency, many of the ships now being produced abroad are superior to the present types of American merchant vessels. A great responsibility rests on those charged with the authority for carrying out our own government's dieselization program to turn out one hundred per cent modern diesel ships, in every respect comparable to the new ships of this type now being constructed in Europe. To compromise and to let parts of the old equipment remain will result in second-hand patched up jobs. From stem to stern and keel to bridge, inside and out, each vessel should be thoroughly renovated.

So much for the 14 vessels being converted by the shipping board. Let us look around at what private American owners are doing in the way of new shipbuilding along the advanced lines being pursued in British shipyards and on the Continent. The largest modern powered (that is diesel or diesel electric) vessels either passenger or freight building today for a private shipowner in the United States, are the two recently laid down, Great Lakes, St. Lawrence and Atlantic freighters similar to the STEELMOTOR and STEELVENDOR in size, that is about 1700 gross tons with a dead weight of 2700 tons and length over all of about 258 feet. The private shipowner in this case is the Isthmian Steamship Lines, a subsidiary of the United States Steel Corp., and the work is being carried out at the Federal Shipbuilding & Drydock Co., another subsidiary of the Steel corporation. The owners feel that they are going the limit in progressiveness (and they are, as compared with any other American shipowner) as they have determined to install in one an American-built two-stroke cycle double acting diesel engine direct connected to a single propeller, while in the other they have decided to install three American-built four-stroke cycle diesel engine-driven electric generating sets supplying current for a motor connected to a single propeller.

The New York Shipbuilding Corp. is building a large twin screw tanker of 13,300 tons deadweight with a main drive of two diesel engines of the shipyard's own manufacture. But this tanker is not being constructed on order. It is being built for the shipyard's own account which is a courageous and progressive move to find sufficient work to keep together a nucleus of an organization and working force. To be sure there are several conversion jobs from steam to diesel

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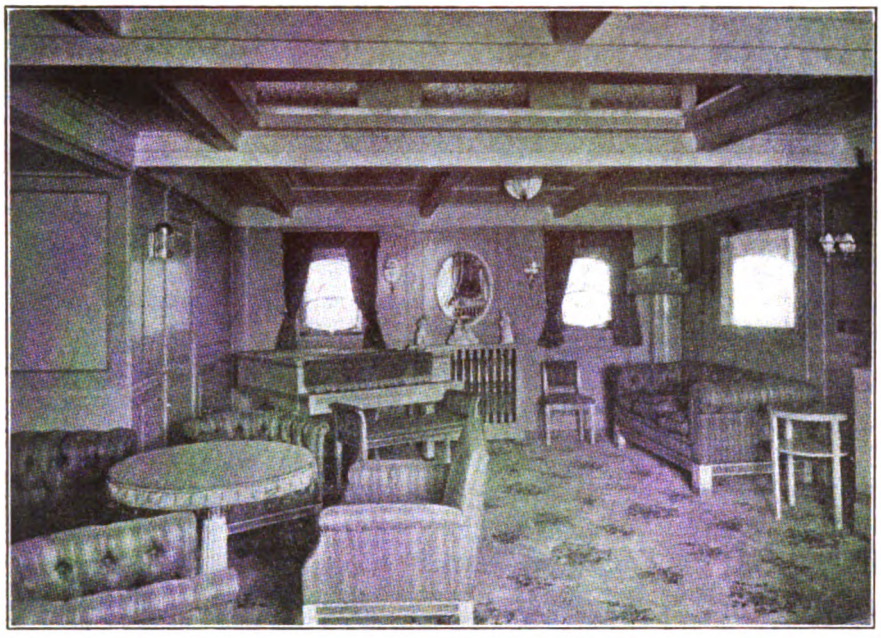
under way for private owners, notably a large freighter for Henry Ford and two tankers for the Standard Oil Company of New Jersey. There is no reason to feel that these converted vessels will not compare favorably with European practice.

There is not much shipbuilding going on in the United States and what there is is practically entirely for our domestic protected trade. In these services foreign competition as such does not need to be considered and consequently individual American lines engaged are apparently marking time and watching each other



MUSIC ROOM OF THE MOTORSHIP PARKESTON

in the matter of taking the initiative in building the most efficient and economical ships possible. At the best this is not a progressive policy to follow and will in the end mean less profits to the ship owner, and less efficient and costlier service to the shipper.

As a result of the war with a large government-owned fleet of merchant vessels on hand, an ambitious attempt was begun, and is still under way, to take over the movement of at least a reasonable part of our own foreign trade. Certain lines have been established and maintained, backed by the power and resources of the government. A number of these established lines have been sold to private American operating companies.

All of the ships involved are now from five to seven years old and they were built (though it may justly be said as good if not better than they could have been built anywhere else under the circumstances) in haste and under difficult conditions as far as materials and equipment were concerned. These ships are, therefore, not as efficient or economical in operation and upkeep as they might be even for their type and age. The privately owned American foreign merchant marine exists mainly as a part of the necessary equipment of great corporations doing a large foreign business in commodities such as steel products, oil, fruit, ore and sugar. Though we carry practically nothing as common carriers between foreign countries and though we only carry about one-third of our own foreign commerce still we have today a sufficient foothold upon which to build up and expand this business if energy, wisdom and progressiveness are exhibited by those in control.

What chance, then, has this foreign-going fleet of ours, composed entirely of ships from five years up in age and many of them not even as good as they should be for their age, in competing for cargoes outward bound and particularly inward bound, against this vast array of the finest and latest examples of the art of naval architecture and marine engineering produced by the ablest brains and hands of old England and Europe? They are building ships with greater speed, better freight handling facilities, better and more pleasing accommodations, less expensive in upkeep and with much greater fuel economy. While we are doing nothing.

The Royal Mail Steam Packet Co. is having built at Harland & Wolff two twin screw motor ships 660 feet long of 15,000 shaft horsepower equipped with every comfort and luxury for the South American trade. The Swedish American Line will soon come out with a new twin screw motor ship 578 feet in length and 13,700 shaft horsepower. The Cosulich Line is having built at Trieste two twin screw motor ships 635 feet long with 18,000 shaft horsepower. The Navigazione Generale Italiana is having built at the Ansaldo Shipyards a quadruple screw motor ship 710 feet long with 20,000 shaft horsepower. This to mention only the outstanding new types of ships now under construction abroad. While the richest and most powerful nation on earth sits idly back and looks on. Perhaps those pessimists who loudly proclaim that we are no longer a seafaring nation are right!

In order to present an effective picture of the progress made along mechanical lines in recent ship building abroad illustrations and more detailed descriptions are given of the following recently built foreign merchant ships.

* * *

Twin Screw Motorship Parkeston

The new twin screw motor ship PARKESTON recently completed by the Elsinore Iron Shipbuilding & Engineering Co., began service on the Royal Danish mail route between Harwich, England, and Esbjerg, Denmark, late in August. This vessel is the first motor ship to be placed on the North Sea passenger and cargo route, and she is also notable for the high horsepower of the machinery for her size. Of the awning deck type and build to Lloyd's highest class, the motor ship PARKESTON has been specially constructed for carrying passengers, mail and cargo between Denmark and England.

Her principal dimensions are length over all, 321 feet; length between perpendiculars, 304 feet; beam molded, 44 feet; depth to awning deck, 28 feet 6 inches; draft loaded, 17 feet 3 inches; displacement, 3805 tons; gross tonnage, 2761; net tonnage, 1572; and deadweight capacity, about 1500 tons. The total capacity of the holds is about 88,000 cubic feet, of which 50,000 cubic feet are insulated and refrigerated for carrying Danish agricultural produce.

By means of six transverse bulkheads the hull is divided into seven watertight compartments. The vessel will float with two adjoining compartments in direct communication with the sea.

Accommodations for first-class pas-

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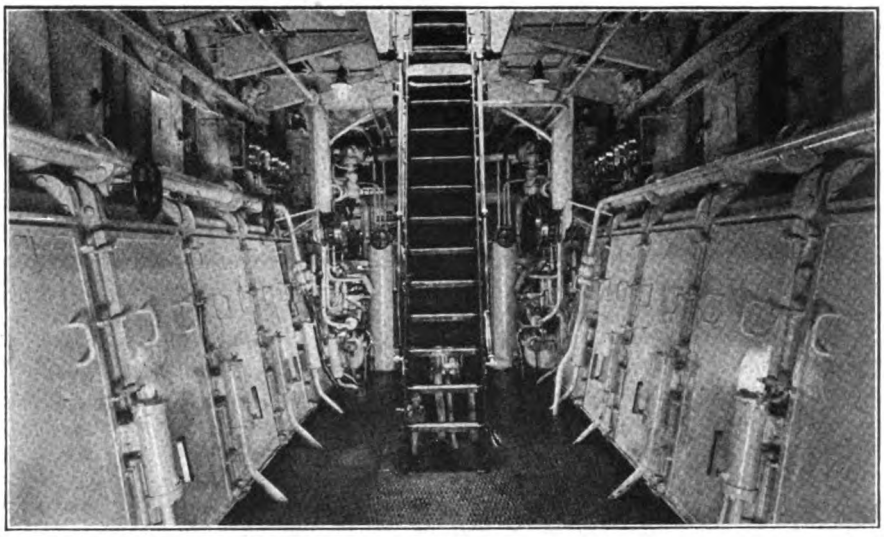
sengers are situated amidships, and are especially well arranged. The awning deck, main deck and 'tween deck each have a range of cabins mostly fitted with single or two berths. There are accommodations for 124 first-class passengers of which nearly half can be accommodated in deck cabins.

On the promenade and bridge decks there is spacious deck accommodations. The public rooms consist of dining salon, smoking room and music room. The dining salon, on the main deck, occupies the whole width of the vessel and will seat 87 passengers. Panels, doors and furniture are finished in polished birch. The smoking room is located on the forward end of the promenade deck and is unusually large for a vessel of this size. The woodwork is finished in polished mahogany. At the after end of the promenade deck is located the music room. Decorations of this room are carried out in a grayish mauve, dull drop color and the ceiling, which expands into a broad dome, is beautifully decorated with carved ornaments.

The promenade deck is entirely closed in at the fore and along both sides for half the length of the deck, thus providing a closed veranda for the use of the passengers, regardless of the weather. Abaft of the music room there is an open veranda furnished with comfortable seats and small tables.

Heating is accomplished partly by hot air and partly by steam radiators. The hot air is blown into the first-class accommodation by means of two large centrifugal blowers which insures an even and agreeable temperature in winter. At the same time thoroughly ventilating the rooms.



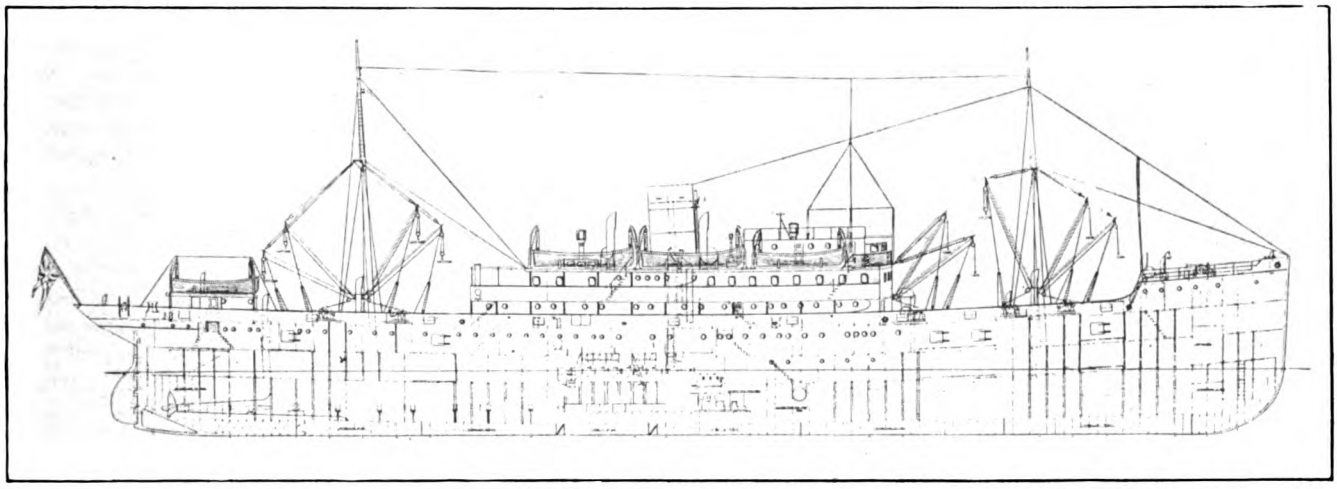
ENGINE ROOM OF THE MOTORSHIP PARKESTON—TWO SIX CYLINDER BURMEISTER & WAIN DIESELS—TOTAL I. H. P. FOR TWO ENGINES AT 190 R. P. M. IS 3800

The PARKESTON is equipped with six powerful electrically-driven cargo winches, as well as an electric windlass and an electric capstan for warping purposes. The steering gear is of the electric-hydraulic type and is controlled from the bridge by means of a telemotor.

The six-cylinder diesel motors built by Burmeister & Wain, each direct connected to a propeller, constitutes the main propulsive machinery. These engines were specially constructed for use in fast passenger vessels. They are of the four-stroke, enclosed, forced lubricated, reversible, trunk-piston type, with a cylinder diameter of 550 millimeters and a stroke of 900 millimeters. During normal operation at sea the engines develop 3800 indicated horsepower at 190 revolutions per minute. On the trial trip a speed of 15¾ knots was reached at an indicated horsepower of 4410.

Besides the main motors there are three auxiliary diesel motors developing 400 brake horsepower. These motors drive the electric dynamos which produce the current for the lighting of the vessel, the working of winches, the steering gear, and other auxiliaries. In addition to the auxiliary motors a small oil burning boiler has been fitted for supplying steam for heating and baths. The vessel is fitted with the most modern wireless telegraphy, direction finder and submarine signal receiving apparatus.

With the inclusion of the PARKESTON in the Harwich-Esbjerg service there will be sailings every week-day in both directions by the United Steamship Co., Ltd. This would have been a fact long ago had it not been for the war, which took toll of the company's fleet to the extent of 26 ships, totaling 35,289 gross register tons. The company's fleet now consists of 121 vessels, aggregating 219,157 gross tons.



GENERAL ARRANGEMENT PROFILE OF THE TWIN SCREW PASSENGER AND MAIL MOTORSHIP PARKESTON BUILT BY THE ELSMORE SHIPBUILDING AND ENGINEERING CO.—MAXIMUM SPEED 16 KNOTS—COMPLETED IN AUGUST, 1925—OWNED BY THE UNITED STEAMSHIP CO., LTD., COPENHAGEN

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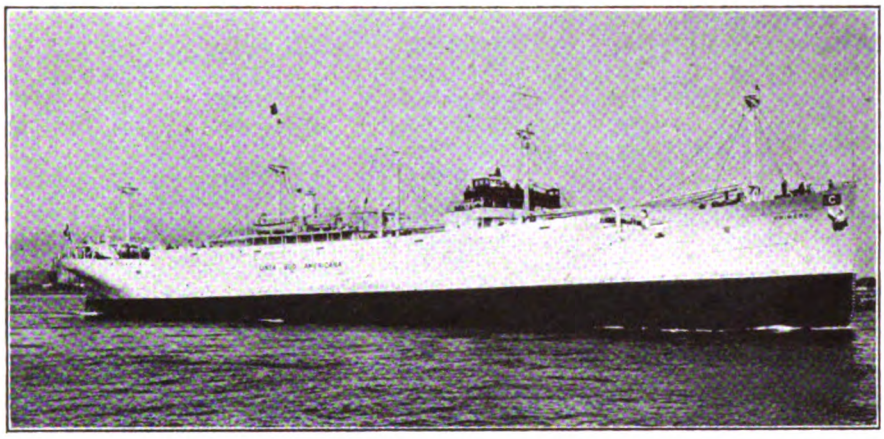
Twin Screw Motorship Primero

The twin screw motorship PRIMERO makes a splendid addition to the growing fleet of modern efficient Norwegian ocean cargo carriers. This vessel was recently completed and had her trial trip on July 18 in Copenhagen sound. Over the measured miles it was found that the indicated horsepower averaged 2335, at 157.8 revolutions per minute. A mean speed of 12.24 knots was attained. The trials were a success in every respect according to reports and the motor ship PRIMERO has entered upon her service between Scandinavia and South America.

The M. S. PRIMERO was built and engined by Burmeister & Wain to the order of the Norwegian owners,



TWIN SCREW MOTORSHIP PRIMERO BUILT FOR NORWEGIAN OWNERS FOR THE SOUTH AMERICAN FREIGHT SERVICE BY BURMEISTER & WAIN

Ibarans & Rederi, Akts., Oslo. The principal particulars of the vessel are: length between perpendiculars, 367 feet; beam molded, 53 feet 6 inches; depth molded to upper deck, 27 feet 6 inches; depth of double bottom, 41 inches; gross register tonnage, 4414 tons and net register tonnage, 2668 tons. The cargo capacity of the vessel in bales is 400,900 cubic feet, and in grain, 428,200 cubic feet. She has a deadweight of 7800 tons on a loaded draft of 23 feet 11 inches.

The PRIMERO is classed in Norwegian Veritas and is of the single deck type with a poop, bridge and forecastle. She has six watertight bulkheads and four cargo holds, two forward and two abaft the engine room. The double bottom extending the entire length of the ship may carry either oil fuel or water ballast, the total capacity of the former being 1060 tons and the capacity of the latter 1435 tons with the fore and aft peaks included.

Particular attention has been devoted to cargo handling facilities. The holds are served with five large cargo hatches. For each hatch there are two steel tubular derricks and these derricks are served by six 3-ton winches and two 5-ton winches. The winches are electrically-driven, as is also the windlass which is suitable for 2 1/16-inch chain cables. The steering gear is of the electric-hydraulic type, controlled from the bridge by means of a telemotor.

Accommodations are provided in the deck house on the bridge for officers and engineers, cook, steward, and a few passengers, as well as an officers' mess, hospital and a galley of the latest type with an oil-fired range. There is also located in this space a large dining salon. The wireless station is fitted with an 1½ kilowatt Marconi set. The wireless operator's cabin and the chart room and wheel house are located in a teak deck house on the navigating bridge. The crew is accommodated in well lighted, well ventilated, steam heated, spacious rooms, two men per room. An oil-fired donkey boiler located in the engine room supplies the steam for the heating system.

The propelling machinery consists of two six-cylinder, 4-cycle single acting and forced lubricated diesel engines of Burmeister & Wain new light built type for twin screw vessels. The revolutions per minute are 150 and the indicated horsepower is 2300. Stipulated speed at sea is to be not less than 10½ knots. The daily fuel oil consumption per 24 hours is about six tons, giving the vessel a cruising radius of around 50,000 miles.

All the auxiliary machinery in the engine room as well as on deck is electrically driven. The current is supplied by three dynamos, two of 33 kilowatts and one of 66 kilowatts, driven respectively by two single cylinder and two twin cylinder auxiliary diesel engines, also of Burmeister & Wain make. Any one of the dynamos is sufficient to supply the current required for normal operation at sea, while only two have to be in operation with all the winches working at full power.

* * *

Twin Screw Motorship Sorvard

On April 11, 1925, the twin screw motorship SORVARD was given a trial trip in Copenhagen sound. A mean speed of 13.36 knots was obtained on this trial with a fuel consumption of 142 grams per indicated horsepower hour of the main engines, the net calorific value of the fuel being 10.78 calories per kilowatt. The main engines developed a total of 3060 indicated horsepower. The fuel consumption given included that for the auxiliary engines producing current for driving the auxiliary machinery, steering gear and electric lights.

The SORVARD was ordered by the Norwegian shipowner, Lauritz Kloster of Oslo, and was built and engined by Burmeister & Wain to the highest class of Norwegian Veritas and to the requirements of the Norwegian laws.

Some of the principal characteristics are: length overall, 384 feet; length between perpendiculars, 367 feet breadth molded, 51 feet 3 inches; depth molded to shelter deck, 34 feet; depth molded to upper deck, 25 feet 6 inches; and depth of the double bottom, 46 inches. The deadweight of this vessel is about 7050 tons on a loaded draft of 23 feet 3 inches. The gross tonnage is about 3673 tons. Fuel consumption per 24 hours fully loaded operation is 8½ tons. The accompanying illustration will show quite clearly what a fine type of cargo vessel this twin screw motorship makes. She has two complete steel decks and six bulkheads. The double bottom is arranged for oil fuel or water ballast. The fuel oil capacity is 1058 tons.

The vessel is divided into four cargo holds which have a total grain capacity of 409,000 cubic feet and a bale capacity of 382,000 cubic feet. Each hold has a hatch with an additional one for the main hold, and all hatches are 20 feet wide. Ten derricks served by ten 3-ton winches make up the cargo handling facilities. The winches are all electrically driven. Other deck machinery such as the steering gear is of the elec-

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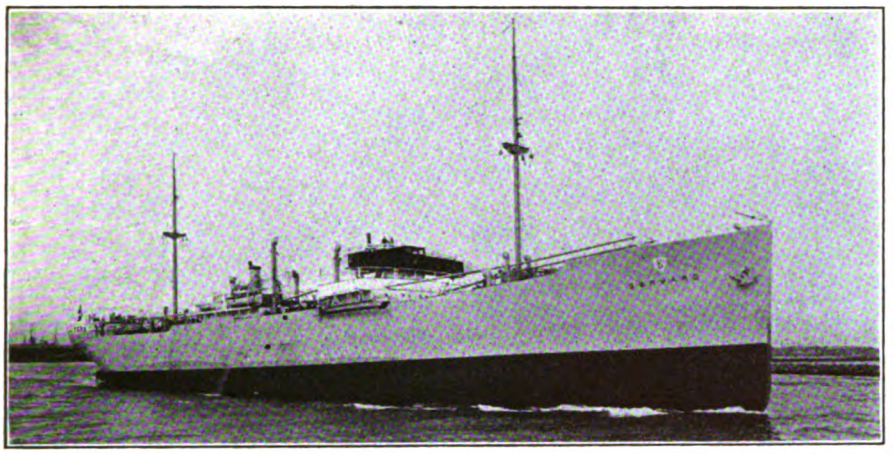


TWIN SCREW MOTORSHIP SORVARD BUILT FOR LAURITZ KLOSTER, OLSO, NORWAY, BY BURMEISTER & WAIN—LATEST TYPE OF MODERN CARGO VESSEL

tric-hydraulic type, controlled from the bridge by a telemotor.

In the bridge erection accommodations are provided for a limited number of passengers, and for the captain and first steward. The wireless cabin, the chart room and the saloon are also situated here. Engineers and deck officers have their accommodation in the deck house around the engine casing. The galley and officers' and seamen's mess room and hospital are also located here. The crew are accommodated at the after end of the upper deck in cabins arranged for two men each. Steam heating is supplied by a donkey boiler located in the engine room.

The propelling machinery consists of two 6-cylinder, 4-stroke single acting diesel engines of the new light built type for twin screw vessels made by Burmeister & Wain. Revolutions per minute are 130 and the total indicated horsepower for the two engines is 2600. The stipulated normal average speed at sea is 10.75 knots on a daily fuel oil consumption of 8¼ tons giving the vessel a cruising radius of about 33,000 miles.

All of the auxiliary machinery, both in engine room and on deck, is electrically driven and the current is supplied by three dynamos similar to the arrangement on the M. S. PRIMERO. Any one of the dynamos is sufficient while at sea, but two, or even all three, must be in operation when the vessel is maneuvering in and out of harbors with the maneuvering compressor running, or when loading and discharging cargo.

* * *

Single Screw Freighter Jevington Court

On June 9, Workman, Clark & Co., Ltd., launched the S. S. JEVINGTON COURT, built for Haldin & Co., Ltd., London, for freight service. The JEVINGTON COURT was completed and had a trial trip on July 8, 1925. This vessel is a beautifully modeled single screw steamer and is the fourth of her type turned out by the builders for the same owners. She will be used by them in their grain and general cargo services.

The JEVINGTON COURT is a complete shelter deck vessel with the following registered dimensions: length, 397 feet; beam, 53 feet 2½ inches and draft, 24 feet 6½ inches. Her gross tonnage is over 4600 tons.

Particular attention has been given to the arrangement of the crew's accommodations which are exceptionally large and are comfortably fitted out.

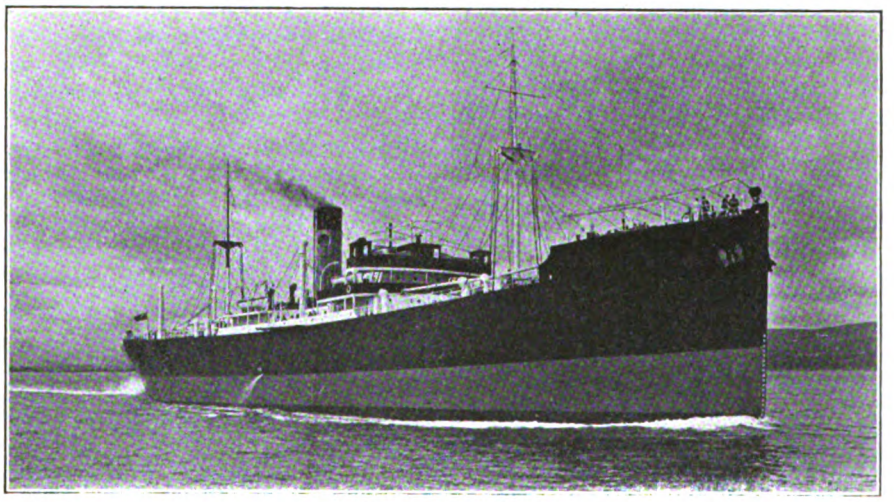
The cargo gear is of the latest type and the large number of winches and derricks have been arranged with careful attention for the expeditious handling of cargo. There are five large cargo holds, arranged particularly for the carriage of grain. The structural arrangements have been designed with this in view, and the holds are free from obstruction.

In this case the old steam reciprocating vertical inverted direct acting surface condensing triple expansion engine supplied with steam by ample boilers is the propulsive power. The machinery was also built by Workman, Clark & Co., Ltd., and can, therefore, be depended upon to be of the highest quality in workmanship and design.

* * *

Single Screw Motorship Heina

The trial trip of the splendid single screw M. S. HEINA illustrated herewith took place on Feb. 4, 1925. The average speed attained on the trial was 11.55 knots, with the motor making 97½ revolutions per minute and with an indicated horsepower of 2450. The average draft was 9 feet, 11½ inches. For the consumption test the main engine developed 2225 indicated horsepower at 93.8 revolutions per minute and the fuel consumption was 129 grams per indicated horsepower hour, including the auxiliary machinery. Immediately on the completion of the trials the vessel loaded cement at a Danish port and started at once on her maiden voyage to South America fully loaded. On this voyage a mean speed of around 10½ miles was attained with the machinery developing 2118 indicated horsepower at 90 revolutions per minute with a total fuel consumption of 6.6 tons per day.



SHELTER DECK STEAM FREIGHTER JEVINGTON COURT FOR GRAIN AND GENERAL CARGO—BUILT BY WORKMAN CLARK & CO., LTD.

The M. S. HEINA was built to the order of J. Ludwig Mowinckel, Ltd., Norwegian shipowner, by the Copenhagen Floating Dock & Shipbuilding Co., Ltd. A good idea of the general arrangement of the vessel may be obtained from the accompanying il-

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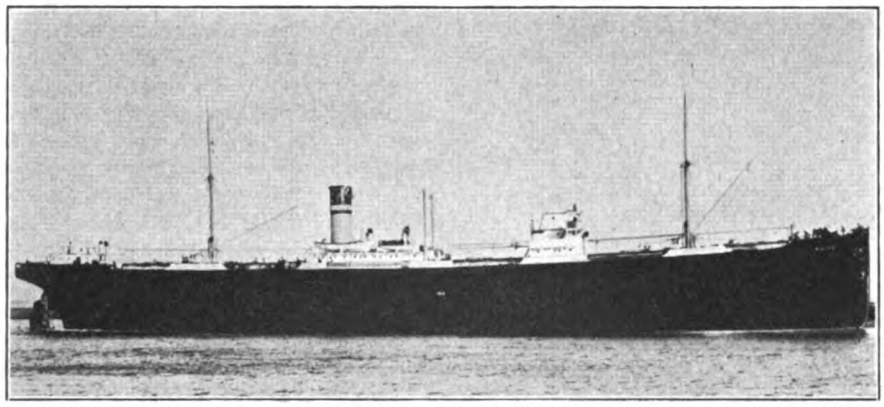


SINGLE SCREW MOTORSHIP HEINA BUILT FOR NORWEGIAN OWNERS BY THE COPENHAGEN FLOATING DOCK & S. B. CO.—A FINE TYPE OF MODERN CARGO VESSEL

lustration. She is constructed to the highest class of Norwegian Veritas of open shelter deck type and strengthened against ice. The principal particulars are: length between perpendiculars, 375 feet; beam molded, 52 feet; depth molded to main deck, 27 feet 6 inches; and depth molded to shelter deck, 35 feet 8 inches. The deadweight is 7610 tons on a load draft of 24 feet, 8¾ inches. The total cargo capacity of the hold in bales is 395,400 cubic feet while in grain it is 437,300 cubic feet. The capacity of the double bottom tanks for fuel oil is 1045 tons while the capacity of all ballast tanks, including deep tank, forepeak and aftpeak, is 2089 tons of water. The HEINA has a gross tonnage of 4027 tons and a net tonnage of 2417 tons. Cargo handling facilities consist of two steel masts and two sampson posts with a total of 10 derricks, the lifting capacity of each being 3½ tons. There is also a 10-ton derrick at No. 2 hatch which can also be used for No. 4 hatch for handling heavy lifts. The holds are provided with five large cargo hatches, 18 feet wide with a mean length of about 30 feet.

Accommodations for the crew are located aft below the shelter deck. The boatswain and carpenter are located in the house on the shelter deck. Accommodations for captain and officers are located in the deck houses on the shelter deck and on the bridge.

All auxiliary machinery, both in the engine room and on deck, is electrically driven. The steering gear is of the electric-hydraulic type with telemotor control from the bridge. The electrical generating outfit consists of three dynamos, two of 33 kilowatts and one of 66 kilowatts, each driven by diesel engines. Steam heating is effected by means of a small cross-tube boiler arranged for oil firing, located in the engine room.

For the main propulsive power an 8-cylinder, 4-stroke cycle long stroke crosshead type Burmeister & Wain diesel engine was chosen. The indicated horsepower of this engine is 2250 at 93 revolutions per minute. The propelling machinery is located amidships and is of the makers' standard type for single screw cargo carriers. The compressor which provides the necessary air for injection of the fuel oil is directly coupled to the crankshaft and built together with the main engine.

Single Screw Motorship Moveria

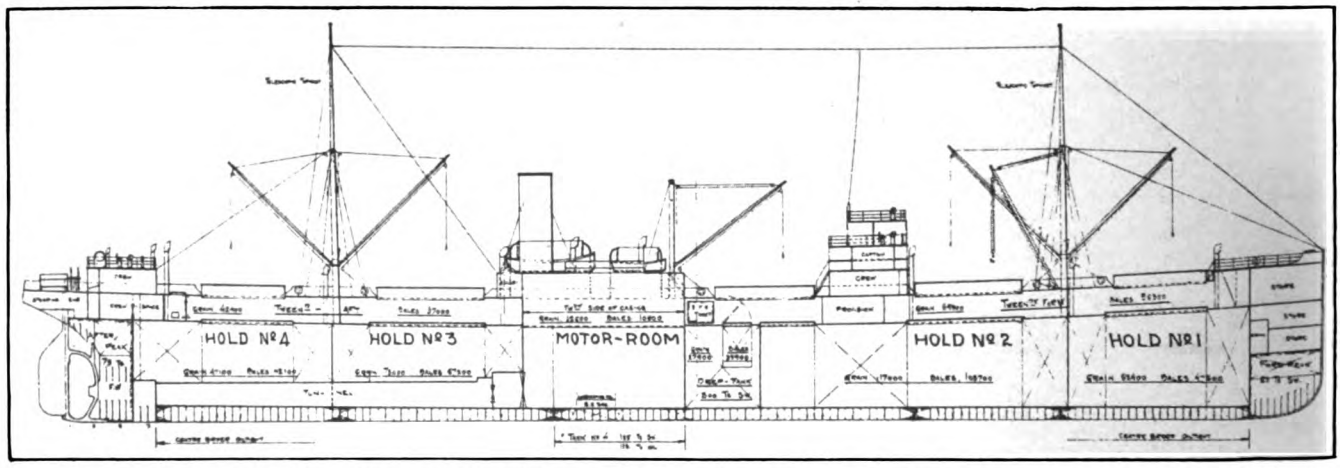
The new Donaldson Line motorship Moveria was launched in October by Vickers Ltd., from their naval construction works, Barrow-in-Furness. The vessel has been designed for the transport of general cargo and cattle, and also has considerable refrigerated space for the carriage of frozen meat. The principal dimensions of the vessel are:—

Length overall, ft	398 0
Length between p.p., ft.	385 0
Breadth molded, ft., ins.	51 6
Depth to upper deck, ft.	39 0
Gross tonnage, ton	5200
Deadweight, tons, about	7500
Draft, loaded, ft., ins.	26 10
Speed, knots	11½

Three continuous decks are provided, a fourth deck being fitted in No. 2 hold, which with No. 4 hold and the 'tween decks of these two holds, is insulated, the total insulated space being over 170,000 cubic feet. General cargo is carried in Nos. 1 and 5 holds and cattle stalls are fitted in the 'tween decks over these holds with emergency stalls on the upper deck, accommodating in all 600 live cattle.

The vessel's side framing is on the usual transverse system, but the double bottom is constructed on the Vickers-Wingate longitudinal braced frame system which it is claimed, while maintaining fully the strength of the structure, is lighter, of more open construction and more easily assembled than is the case with the usual transverse method of framing. The Vickers-Wingate method of double bottom framing has been approved by Lloyds Register of Shipping and also by the British Corp. for the survey and registery of shipping.

The accommodation for officers and crew is amidship. The crew's accommodation is on the port side of the



INBOARD PROFILE MOTORSHIP HEINA—OPEN SHELTER DECK FREIGHTER—PARTICULARLY FITTED FOR LONG DEEP SEA VOYAGES

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bridge deck, quarters for the cattlemen being on the opposite side. Steam heating is provided for use in cold weather.

The steering gear is of the Wilson Pirrie type mounted on the upper deck aft; telemotor gear leading from the bridge and a stand by steering position aft, together with emergency gear to be operated by the aft winches, is provided. Signalling and direction finding wireless gear are provided.

Fourteen steam winches, 7 x 12 inches, are fitted for handling the cargo. The derricks are fitted to the two masts and to derrick posts. Two of these on the foremast are of 10-ton capacity, the remainder being of 5-ton capacity.

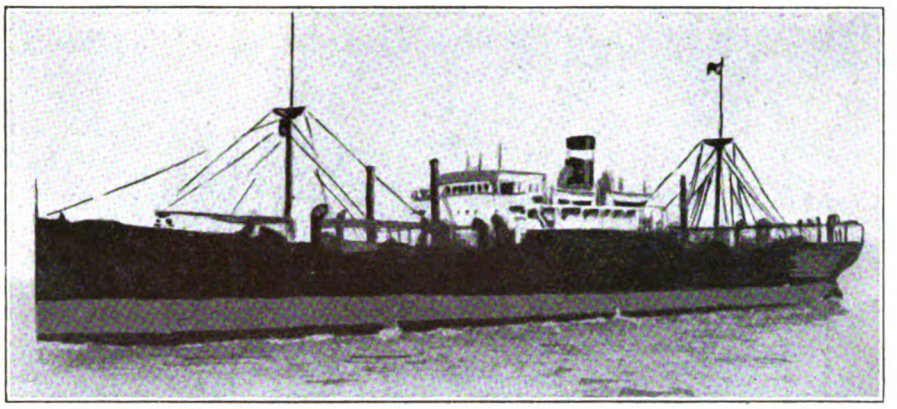
The refrigerating plant, supplied by Messrs. J. & E. Hall Ltd., is of the carbon dioxide duplex type, the gas compressors being driven by a compound horizontal steam engine. The brine is circulated by three independent duplex pumps, the system being arranged so that freezing, chilling and thawing may be carried out at the same time in different compartments.

The main machinery consists of a single, 8-cylinder oil engine of the Vickers 4-stroke single acting solid injection type with cylinders 30 inches in diameter and 45 inches piston stroke. This engine, which develops 2700 brake horsepower at 110 revolutions per minute is the largest of its type yet built. It embodies many improvements in details suggested by experience in tanker service of similar but smaller engines built by Vickers Ltd. Compressed air is used for starting and reversing only in this type of oil engine, the fuel being injected into the cylinder by mechanical means.

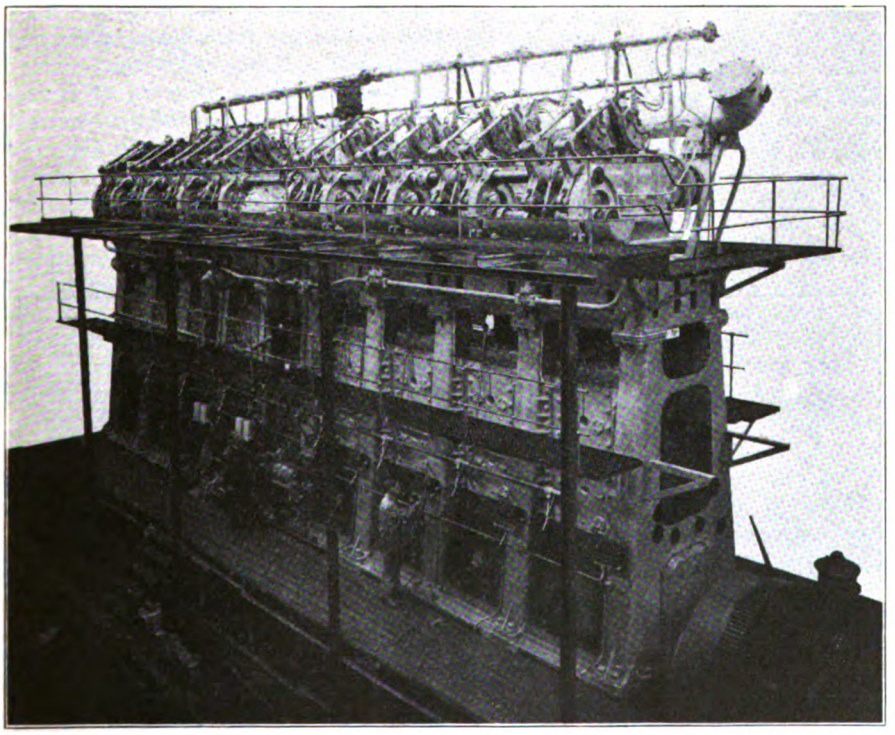
Maneuvering is effected simply by the movement of three hand levers arranged together at the starting station near the middle of the engine and controlling the starting, stopping and reversing functions.

The engine is self-contained with all the necessary pumps for its own operations and also drives a bilge pump so that in normal service no separate auxiliaries require to be run specially on this account.

Three boilers, 10 feet 6 inches long by 10 feet 6 inches in diameter with double furnaces fitted for oil firing, are fitted at the aft end of the engine room for supplying steam to the deck and engine room auxiliary machinery including the large refrigerating plant. Each boiler has a heating surface of 1098 square feet and a working pressure of 120 pounds per square inch.



SINGLE SCREW MOTORSHIP MOVERIA BUILT AT VICKERS LTD. FOR THE DONALDSON LINE FOR THE GENERAL CARGO AND CATTLE TRADE



2700 BRAKE HORSEPOWER OIL ENGINE FOR MOTORSHIP MOVERIA EIGHT CYLINDER FOUR CYCLE VICKERS LTD. TYPE

* * *

Twin Screw Motorship Borgestad

The motorship BORGESTAD, illustrated in the accompanying photograph and profile is of the single deck type with poop, bridge and forecastle and is classed I. A. I. in the Norwegian Veritas.

The principal particulars are:

Length between p. p., feet, inches	350 0
Breadth molded, feet, inches	51 3
Depth molded to upperdeck, feet, inches	27 3
Depth of double bottom	46
Gross tonnage	3924
Net register tonnage	2336
Cubic capacity, grain, cubic feet	345000
Deadweight tons	6800
Draft loaded, feet, inches	22 11
Fuel consumption per 24 hours in tons about	6

This vessel has been especially designed for long voyages, the oil fuel capacity being sufficient for a cruising radius of about 50,000 miles.

Particular attention has been paid to cargo handling facilities. The holds are provided with spacious cargo hatches having a width of 20 feet and an average length of about 30 feet. For each hatch there are two steel tubular derricks capable of lifting 3 tons with a single purchase and 5 tons with double. The derricks are served by eight 3 tons winches and two 5 tons winches, the latter, located on the poop, are fitted with extended ends and large warping drums.

Latest Propelling Machinery

Motive power is provided by two 6-cylinder, four-cycle, single acting, forced lubricated Diesel engines.

The principal particulars are:

Cycle of operation, strokes	4
Number of cylinders	6
Revolutions per minute	143
Indicated horsepower	2200
Brake horsepower	1700
Stipulated speed at sea, knots	10¾

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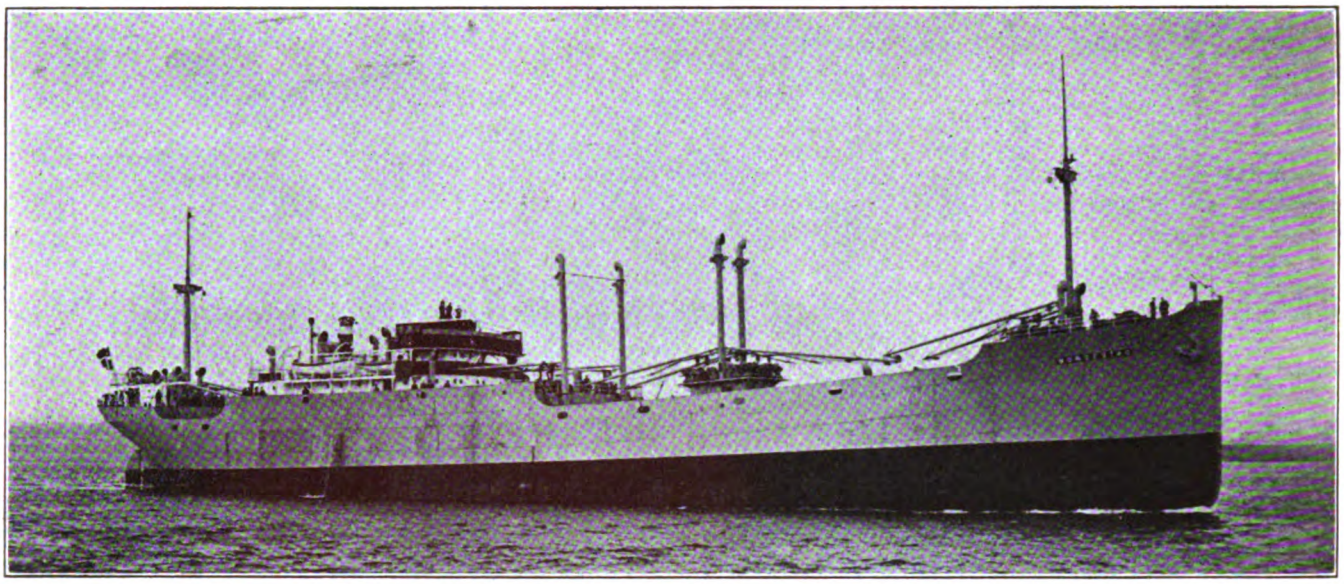


BORGESTAD—TWIN SCREW DIESEL FREIGHTER BUILT BY BURMEISTER & WAIN

Fuel oil consumption per 24 hours is about six tons giving the vessel a cruising radius of about 50,000 miles.

Auxiliary Machinery

All the auxiliary machinery in the engine room as well as on deck is electrically driven, the current being supplied by three dynamos, two of 33 kilowatts and one of 66 kilowatts, driven respectively by two single cylindered and one twin cylindered Diesel engines of Burmeister & Wain design and construction. The voltage for power purposes is 220 volts, but for lighting purpose this is transformed to 110 volts by means of a rotary transformer. Any one of the dynamos is sufficient to supply the current required for normal working at sea, while only two have to be in operation, when the vessel is loading and discharging cargo with all the winches working at full power.

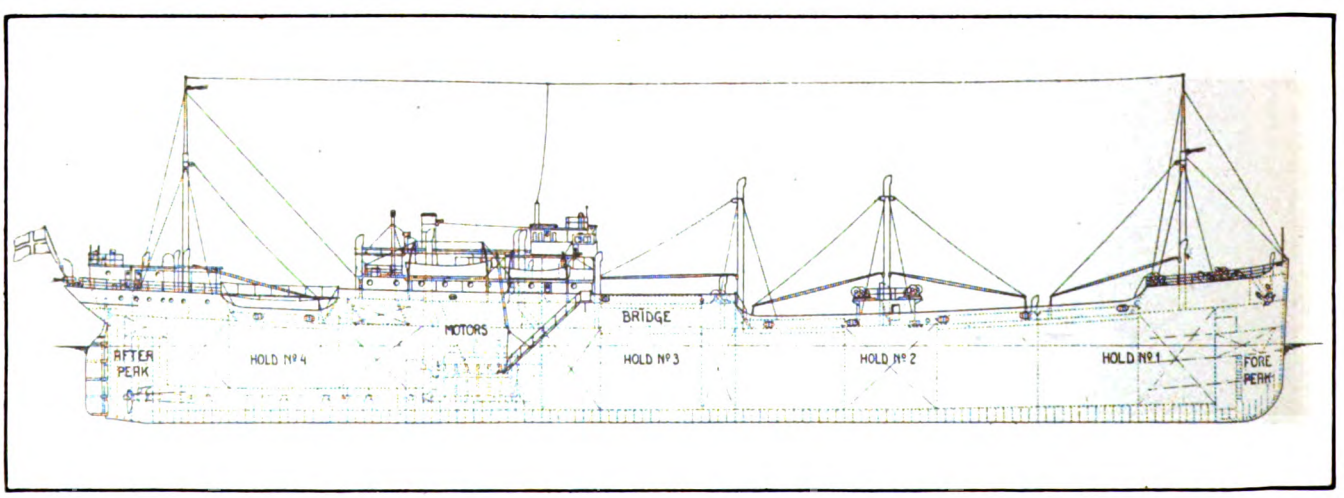
The machinery space, as seen on the profile drawing, is extremely small, the entire length of the engine room being only 35 feet, thus giving about 20 per cent more cargo space than would be the case for a steam driven vessel of similar dimensions. Nevertheless, the engine room could be further reduced, but in doing so the cubic would be less than 13 per cent of the ships total cubic and the 32 per cent deduction for gross tonnage would not then be allowed.

Just as the engine room has been reduced to the permissible amount so the weight of the machinery has been cut down to a minimum. The figures in tons are:

	Tons
Main engines	168
Auxiliary engines	31
Auxiliary machinery	9
Reservoirs	20
Donkey boiler	2
Shafting, complete with all accessories including reserve propeller	32
Ladders, gratings, floor plates, lifting gear, spare parts, engine room ventilators, telegraph gears, special tools, etc.	22
All piping clear of engine and including bilge and ballast piping, bottom valves etc.	16
All electrical material inside the engine room	3
Water in piping	4
Total in tons	307

The trial trip of the motorship BORGESTAD was run on Jan. 6 in the sound at Copenhagen in ballast condition, and the following results were obtained over the measured mile: Average indicated horsepower, 2695; revolutions per minute average, 154; mean speed in knots 12.22.

During the trial, the main engines developed 2695 indicated horsepower at 154 revolutions per minute on a fuel consumption of 0.282 pounds per indicated horsepower per hour for the main engines or an amount equal to 0.362 pounds per brake horsepower per hour. This fuel consumption includes that for the auxiliary engines producing the necessary current for driving the steering gear and for electric light. The trials were carried out in the presence of representatives of the owners and several guests. On the following day the motorship BORGESTAD sailed from Copenhagen to begin her maiden voyage to South Africa, a service for which she is specially adapted.



LOCATION OF MACHINERY AND GENERAL ARRANGEMENT OF THE TWIN SCREW MOTORSHIP BORGESTAD

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Cut Cost of Terminal Movement *Use Inland* Union Freight Stations

Present Lack of Co-ordination a Severe Economic Loss—Preemption of Water Front by Railroads Retards Growth of Shipping — Lower Manhattan Island To Be Divided Into Inland Terminal Zones Served by Union Freight Stations

Trucks waiting to deliver freight at a North river New York railroad pier—Taken July, 1925

BY MAJOR ELIHU CHURCH
Transportation Engineer, Port of New York Authority

THE freight terminal problem of our cities is the most important matter facing transportation men. Solve it they must, and quickly for present conditions are a disgrace and daily grow worse. The cost of doing business and the cost of living in any community depend in the main on the facility and expense of shipping and receiving its freight. A freight movement involves the line-haul and a terminal movement. Line-haul, whether by railroad or steamship, is about the cheapest service in the world today. The big costs, both to carrier and shippers, are in the terminals. It costs the carrier more to operate his terminals than to carry freight over his line. It generally costs the shipper many times more to get his freight to and from the railroad or steamship than he pays them for transportating it. Terminals and their operation are the "sore spots" in transportation. What is the cause and what is the remedy?

Cities ship and receive great quantities of freight. They cover huge areas of territory. Their land values are high. In order to handle this tonnage, railroads maintain extensive yards and stations located in different sections of the community. The property they occupy represents a big investment. They endeavor to place their "line cars" as near the industrial heart of things as possible. The "overhead" which this involves is tremendous. The operating costs for switching and for transfer and distribution of l.c.l. shipments are very great. Under existing conditions traffic requirements and the pressure of competition make this necessary.

Congestion Causes Expensive Delays

The plight of the shipper and receiver of freight is worse. Having packed his goods for shipment he must needs get them to the carrier. Perhaps he operates trucks of his own, perhaps he employs a truckman. In either event the carting of freight through a city's streets is sure to be an expensive proposition. The trucks are loaded at factory or warehouse. That takes time. They travel long distances through crowded streets to the freight station or pier of the carrier. That takes more time. When they reach this point the real delay comes in, for high real estate values produce cramped quarters, and trucks often have to wait hours for an opportunity to discharge their load. All this lost time means lost money; for the cost of trucking is measured by time, not distance. Distance is mainly of importance as it takes time. When you stop to think that it costs six cents a minute to keep a motor truck on the streets, the expense of delay is obvious.

The shipper operates under still another handicap. Seldom all of his freight is handled by a single railroad or steamship line. As a matter of fact most shippers have goods going out on several different railroads or steamship lines every day. The average is three. That means "split" deliveries, with a long delay at each station or pier visited; or, what is worse, separate trips to each station or pier. Much of the partial loading of trucks is due to this use of several vehicles where one could carry the load but is prevented from doing so in the time available by long hauls and delays.

The handling of inbound freight is equally inefficient and costly, as it has to be collected by the consignee in small lots from the separate and often inconveniently located stations or piers of the individual carriers. Again congestion and consequent delays. Again long hauls, partial loads and high costs.

Terminal Problem Must Be Solved

The present situation is the result of years of haphazard growth, of unco-ordinated development, and of a self-centered and intensely competitive policy on the part of the carriers. Before conditions can be bettered they must be considered as a whole, and improvements worked out with a clear understanding of the mutual responsibilities and reciprocal interests of all concerned.

No one gets anything for nothing, even if he does not have to pay for it directly at the moment. Shippers cannot exclaim: "Oh, what if present terminals are a heavy expense? It is borne by the carrier." True, but in the long run it must be included in the rate and ultimately is paid by the shipper. Conversely the car-

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riers cannot say. "Why should we worry if our stations are a bit inadequate. We've done as much as can be expected of us, and anyway the shippers pay for their own trucking." True again in a way, but only in a very superficial way, for these same trucking costs often far exceed what it paid for the line-haul They are a crushing burden on transportation and limit the quantity of goods shipped. Lower them and more tonnage will move. More tonnage moving means more business and more profits for the carriers.

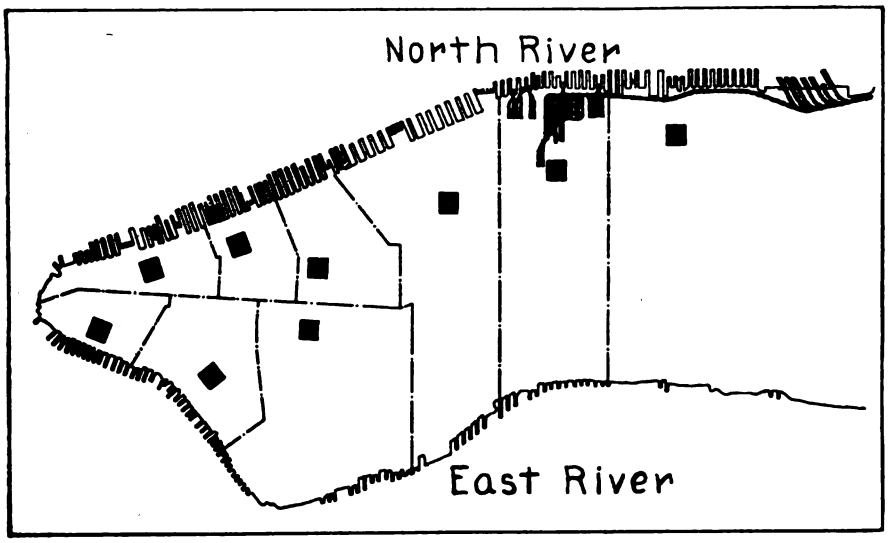

DIAGRAM OF LOWER MANHATTAN ISLAND DIVIDED INTO INLAND TERMINAL ZONES FROM FIFTY-SEVENTH STREET SOUTH—SHADED SQUARES SHOW PROPOSED LOCATION OF UNION FREIGHT STATIONS

The terminal problem has become too big for the individual railroad or steamship line to properly cope with it. At best they can only reach a few scattered sections of the community, and they do this at great expense both for property and operation. The time has come for *union freight stations*, located at strategic positions in the districts producing and receiving freight, and used jointly by all the railroads concerned. A city should be divided into zones, each of which produces and receives a tonnage substantially equal to that of the other zones, and of sufficient amount to warrant the construction of a freight station.

Union Terminal Station Proposed

These union stations will be "off-line." They will not be on the rails of any of the carriers. It is not necessary or advisable that they should be. Freight cars should not be brought into densely built up cities except in special instances. The rail journey of freight should begin and end at a yard on the main line some distance outside the congestion area and where land is relatively cheap. Line cars bearing freight for the city should be unloaded at this point. Expensive stations are not required. Adequate covered platforms will generally serve the purpose. As soon as the freight is taken from the car it should be consolidated with other shipments destined to the same "zone". Tractors and trailors or trucks with demountable bodies will carry it to the union station.

Much of the bother, expense and delay of breaking up trains, and switching individual cars hither and yon to particular local destinations is done away with. Furthermore, as soon as the line car is unloaded it becomes available for reloading for a return trip. This makes possible a greater use by the railroad of its rolling stock.

A tractor or truck that takes a load of inbound freight to the union station will at once return with a full load for outbound shipment. It will be continually busy doing this work all day long and at low cost. Outbound freight arriving at the platform at the rail head will be sorted for destination and loaded into cars. As freight from all the off-line union stations is constantly coming in to this one focal point it will be possible to secure the most efficient loading of cars. Under present practice where loaded cars come from a road's different local stations, consolidation of loads can only be secured at the cost of an additional handling and much time. There will be no congestion or delays at these breakbulk platforms as at the present terminals. Inbound freight will be immediately forwarded to a zone station where it will be within a few blocks of its ultimate destination. Outbound freight will be promptly loaded into cars and dispatched towards its destination.

There is no reason why carload freight should pass through the new union stations. The best procedure will be to forward inbound shipments direct from the breakbulk platform in the railroad yard to the consignee. Outbound carload shipments would likewise by-pass the stations and be trucked from the shipper to the car at the rail head.

It is natural that railroad men might at first object to union freight stations. The competitive spirit is still strong in them. Since rates are fixed by the interstate commerce commission the railroads now largely compete for business on the basis of exclusive terminal facilities. While it is true that union freight stations place all roads on an equal footing in soliciting traffic. So far as terminals are concerned, it also means that each road will have facilities equal to every other road in all sections of the city instead of having to rely for tonnage on the localities adjacent to its own tracks. In future, competition will largely be based on the line-haul service. There is no economic justification for the expenses of the present system, and it is doubtful if any road can continue to incur them in the face of better methods.

From the standpoint of the shipper and receiver of freight, union freight stations will prove a tremendous boon. Each zone will be a self-continued, self-sufficient piece of terminal territory, equally accessible to and from all lines of carriers, rail or water, serving the city. No longer will shippers forward their freight in small lots to a dozen different terminals and piers scattered all about. No longer will trucks move to and fro through the streets for long distances and but partially loaded. On the contrary, no matter on what road or steamship line or on how many different roads or steamship lines the shipments are carried all will be sent direct to the nearest zone station. This means full loads and short hauls for the trucks. Assuming that the stations have been properly designed to handle the business of the territory they serve, there will be no waiting and no delays for the truck when it reaches the station. Adequate tailboard space will be provided to accommodate all that come.

These union stations will act as "clearing houses" for shipments brought to them. As freight is unloaded from the trucks it will be weighed, sorted and piled ready for the carrier who transports it. These consolidated piles of outbound freight will be constantly forwarded to the

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loading platforms at the railheads, or to steamship piers, by the tractor-trailers or trucks that maintain the connecting shuttle service.

How To Finance Them

Naturally, inbound shipments will be handled in the reverse order. Unloaded from the cars at the railhead, or from a ship at her pier, the different lots will be consolidated and sent immediately to their respective zone stations. Here they can be stored, if desired, or held till called for by the consignee, or possibly delivered direct to his door. The "pick-up" and "delivery" of small shipments is a take-it-or-leave-it service that can easily be furnished. Many merchants will collect their inbound freight on the return trip of the truck that takes their outbound shipments to the union station.

Union freight stations must be where tonnage comes and goes. They will require a good deal of area for their platforms and plenty of tailboard space for the trucks. That means they will cover a lot of ground, and ground costs money in the locations where they are needed. The freight service can be handled on two levels, one for inbound and one for outbound shipments. These levels can be reached from the streets by ramps. The question now arises concerning the best use to make of the space above the platforms and driveways so that it may help to carry the expense. Terminal buildings erected here can serve many useful purposes. They can provide storage space that will be invaluable in connection with the freight movements carried on below. In addition, loft space in such a building has unusual advantages. It particularly lends itself to light manufacturing and to use by merchants whose business involves the handling of goods in transit. Manufacturers can receive their raw materials and forward their finished products with a minimum of delay and expense. No better conditions can be found for work which requires the storage of stocks that are held in reserve for a quick delivery or that are constantly drawn upon in filling orders.

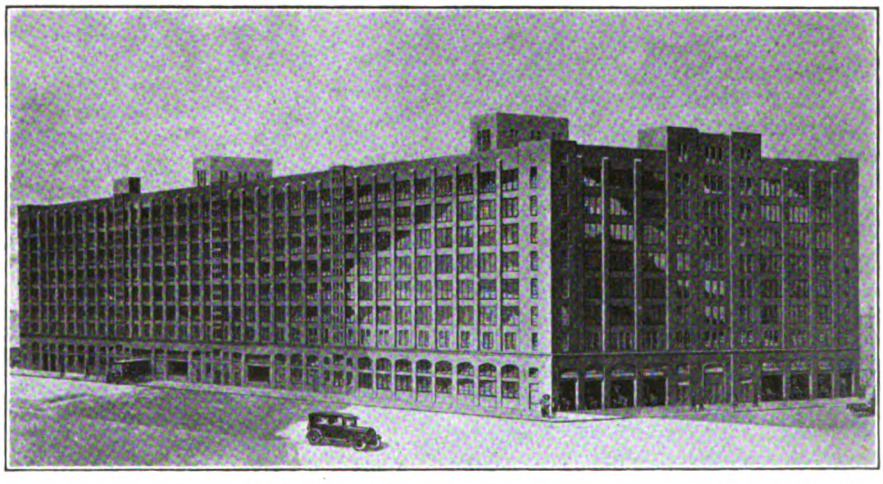
The carriers and the shipping public are not the only ones to benefit from a solution of the terminal problem. The whole community has a stake in the matter. Nothing so greatly affects the business and living conditions of all the people. Remove the tribute now paid to waste, delay and bad methods generally and industrial and household budgets will show the result. Not only will all costs chargeable to transportation be lowered, but cities will be better places to live and work in. There will be less street congestion when you localize truck movements. The reduction of truck mileage due to fewer trucks, heavier loads and shorter haulage distances will work wonders in improving street conditions. The growth of a city can be stimulated and new industrial districts developed by the erection of additional off-line union stations wherever advisable.

The metropolitan district now labors under many disadvantages. Adequate belt lines for the interchange of railroad cars are still lacking. The plight of Manhattan island is the worst of all. Much of its tonnage is carried by railroads that terminate on the New Jersey shore. There is no track connection. Cars are carried by rail as far as the waterfront; there they are put on carfloats and towed across the Hudson to pier stations on the island. A few cars are brought ashore to team tracks. As there is no room there for the rest they are unloaded and reloaded while on the floats. This means that a large part of the waterfront is taken up by the railroads, and all freight has to be hauled to and from this section. New Jersey also suffers, for much of her shore line, instead of being available to shipping, is given over to yards and floatbridges incident to the service. The railroads assume the carfloat and lighterage costs, as well as the pier rentals. It is a costly process and one that has about reached the limit of its capacity.

It has been proposed that tunnel or bridge connection be made between terminals on Manhattan and the various trunk lines for the use of standard cars. It can't be done because it would call for too heavy a capital investment. The operating difficulties would be very great. There is no place to put the cars were they brought over. As the present time several of the railroads are unloading some of their cars in their New Jersey terminals and having the freight brought over by trucks on the ferries. Part of it is taken to freight stations and warehouses. Part of it is taken direct to the consignee. This is a step in the right direction but it does not go far enough.

New York Port Authority's Plan

The Port Authority has in contemplation the division of Manhattan Island into about a dozen zones as indicated in the accompanying diagram each of which has an in-and-out tonnage total about the same as that of the others. Nine of these areas of equal traffic density have been mapped out in the section below Fifty-seventh street. Each zone will be provided with a union freight station to be used jointly by all the different railroads. The stations will be located so that the hauls to and from them will be a minimum, and the traffic will not move through busy streets. Terminal buildings, as shown in the accompanying illustration, attractive in appearance and modern in every detail, will be erected above the freight platform levels. Space will be rented in subdivisions of any size for warehouse, loft and industrial purposes. It is felt that the unequaled shipping and other facilities which a tenant will possess will make this space eagerly sought for.



PROPOSED TYPICAL "OFF-LINE" UNION FREIGHT STATION AND INDUSTRIAL TERMINAL

It is planned that the break-bulk platform at railheads will be provided and operated by the carriers as part of their service. Their tariffs will include transporting their freight between railhead and zone stations and its handling on the zone station platforms. Estimates show that this can

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be done for less money than is now spent for the present method. The flat New York City rate will apply to all these stations via any railroad. Most railroads now have but three or four stations on Manhattan, but in future they will enjoy equal facilities at nine well located stations. Shipments of five tons or more to a single destination may be transported direct between store-door and railroad for a nominal extra charge.

It is estimated that forty-three piers on Manhattan's waterfront now given over to the railroads will no longer be needed by them and will be available to meet the growing demand of steamship interests for harbor frontage. The same thing applies to the New Jersey shore where the terminals and floatbridges are.

Refrigerated freight,—fresh meat, fruit and vegetables, must be carried to destination by the car that brings them over the line. Carfloats will continue to be used to convey these line cars over the Hudson. All fresh fruit and vegetables will be received at an especially designed carfloat terminal located to meet the convenience of the trade. A separate inland terminal will be built for the exclusive use of dairy products.

To better terminal conditions, the situation must be handled in a broad gage way. The united efforts of all concerned are required to bring about a reduction of expense by the elimination of waste. The plans proposed for New York can be applied with modifications almost anywhere. The railroads will benefit through reduced costs, increased tonnage and a large number of additional terminal facilities. Shippers get better service at the same rates and with a great saving in cartage costs. The business and civic conditions of the community will be improved. Congestion in New York is estimated to cost truckers a hundred million dollars a year, and the streets in some sections are an annoyance and danger to those who use them.

The fight for betterment must always be centered against waste and inefficiency. Not only those directly interested, but the public generally must be made to realize what they suffer from bad conditions. Then they must be shown what to do to improve matters. The attack must be led by men who really know what they are talking about and who have the vision, force and ability to carry a plan through to a successful conclusion. No movement is ever bigger than the men behind it. It you would succeed, get leaders of the proper caliber.

Munson Highest Bidder for Pan-American Line

On Sept. 12, three bids were filed with Admiral Palmer for the purchase of the Pan-American Line, which now runs four steamers between New York and the east coast of South America, under the management of the Munson Steamship Lines acting as agents for the Emergency Fleet Corp. On Sept. 14, President Palmer of the Fleet corporation sent to the shipping board his recommendations for the disposal of the four ships. At that time terms of the various bids and Mr. Palmer's recommendations were not made public.

On Sept. 17, the shipping board by a three to three vote failed to affirm the recommendation of Mr. Palmer that the four ships of the Pan-American Line be sold to the Munson Steamship Lines, the present operators, for $3,080,000. Commissioner Benson was not in attendance. On Sept. 18, Frank C. Munson, president of the Munson Steamship Lines, appeared before a special meeting of the board to explain his offer. It was not at the time indicated what action would ultimately be taken. At the time of this writing no further developments are known.

Allow Sale of Lakers To Alien Operators

At the initiation of Admiral Palmer the United States shipping board has voted favorably on the suggestion that the lake type of surplus government owned vessels be offered for sale to foreign operators on the condition that they shall not be used in trade with the United States. There are still about 120 of this type in the laid up fleet.

This action was taken after the board had rejected Admiral Palmer's recommendation that he be allowed to offer for sale abroad surplus ships of all types that could not be disposed of to American owners.

Under the law ships may be sold to aliens only when they cannot be disposed of in the United States and then only if five of the seven commissioners vote in favor of the sale.

Norfolk Army Base Leased

Chairman O'Connor of the shipping board announced recently that the board has approved the lease of the Norfolk army base belonging to the shipping board to the Norfolk Tidewater Terminals, to be operated in conjunction with the municipal terminals. This is the result of competitive bidding for this property some months ago. The lease is to run for a term of five years, according to the board's policy for private operation.

Luckenbach Line Claims Southern Rail Rates Unjust

Proportional rates by rail to and from South Atlantic and Gulf ports is asked by the Luckenbach Steamship Co. in a complaint filed with the interstate commerce commission against the Southern and 16 other railroads serving the ports.

It is alleged by the steamship company that all the rates published by these carriers to and from the South Atlantic ports upon all classes and all commodities are unjust and unreasonable when applied to traffic that has been or is to be transported by the complainant company through the Panama canal to destination, wherever such rates are the same or higher than the rates by way of the same railroads between the same points on the same classes, and same commodities where the same have not been transported by water. The complaint said that the Panama canal act of 1912 specifically conferred upon the commission authority to establish proportional rates to and from ports on traffic receiving transportation by water.

August Lake Levels

The United States Lake survey reports the monthly mean stages of the Great Lakes for the month of August as follows:

Lakes	Feet above mean sea level
Superior	601.49
Michigan-Huron	578.42
St. Clair	573.77
Erie	571.08
Ontario	244.90

Lake Superior is 0.10 foot higher than in July and it is 0.09 foot lower than the low August stage of a year ago. Lakes Michigan-Huron are 0.10 foot lower than in July and they are 1.22 feet lower than the low August stage of a year ago. Lake Erie is 0.03 foot lower than in July and it is 1.07 feet lower than the August stage of a year ago. Lake Ontario is 0.31 foot lower than in July and it is 1.14 feet lower than the August stage of a year ago, and 1.45 feet below the average stage of August of the last ten years.

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Board Must Not Run Amuck

President Coolidge Firm in His Policy in Support of Admiral Palmer *and Means* To Get the Government Out of Shipping

ONE phase of the present difficulties of the merchant marine that interests President Coolidge above many others is the need for the sale of the ships. This policy of the President has not been disguised in recent utterances from the White House. On the other hand it has recently been strongly emphasized that the transfer of the government ships to private owners should be accomplished as speedily as possible.

A number of sound ideas on plans to overcome the present muddle of government operation of the fleet have been proposed in the past, only to be rebuffed by various interests, government or otherwise. Consequently, some of the best minds in the shipping industry reached the conclusion that to hit upon a shipping program that would have the backing of a large number of interests, either directly or indirectly connected with shipping, might hasten a program that would be acceptable to congress.

Congress Expected To Formulate Policy

That President Coolidge means to give Admiral Palmer, president of the Emergency Fleet Corp., a free hand in the administration's policy of getting the government out of the shipping industry, is clearly evident from the President's own attitude in the Haney controversy. Commissioner Bert E. Haney of Oregon, member of the board, has consistently blocked the efforts of Admiral Palmer in policies of ship sales. President Coolidge has asked Commissioner Haney to resign, which the latter has refused to do on the so-called grounds that his resignation would be an admission of "bad faith" with the President. He claims he made no promise at the time of his appointment that he would not interfere with President Palmer's handling of sales policies. As Haney's appointment was a recess one, it needs only to be withdrawn from the senate by President Coolidge. And there the matter should end. Nevertheless, Commissioner Haney very likely sees in the controversy an opportunity for making political capital in his natural ambition for political preferment in Oregon. The controversy has, therefore, been made to appear something of importance, instead of a tempest in a teapot.

Get Behind Drive To Sell Ships

Several members of congress have seized upon the Haney case as an opportunity to attack the administration's policy of dealing with the shipping board, questioning the propriety of the President's "interference" with the board. Operation of the government fleet, these legislators hold, should be by a board of seven members rather than by one man. Senator King of Utah, in criticizing the President, likened the board to the interstate commerce commission in its degree of fundamental independence, and argued that the executive does not have the right to circumscribe the duties of the shipping board or to determine the policies the members should adopt. This, of course, raises the question of whether a board or commission created by congress under supervision of the President should be allowed to run amuck. In view of what the shipping board has been unable to accomplish, unquestionably sentiment is growing for legislation to abolish the shipping board entirely, and to transfer the Fleet corporation to a central governmental shipping agency in the department of commerce.

Sales negotiations with respect to the Pan-American line have been completed and negotiations have been on for the American Republics line, and the Pacific Australian line. The Pan-American line, operated under the MO4 agreement by the Munson Steamship Lines, has four combination cargo and passenger vessels of the 535-foot type, each of about 13,000 deadweight tons and runs to South America.

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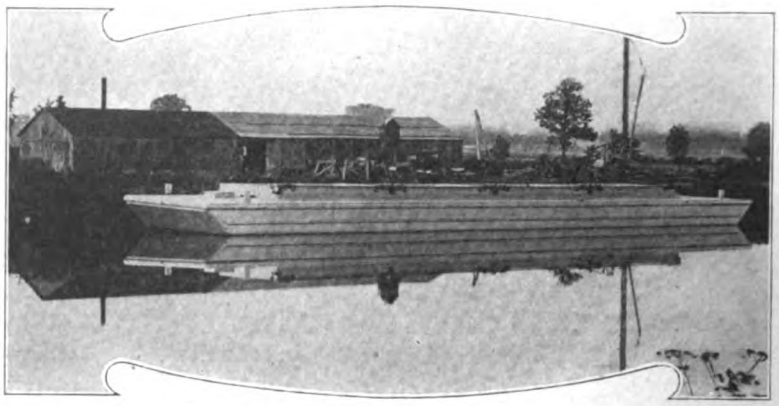
Hulls Built of Steel Channels *are* Stronger and Lighter

Increased Deadweight Capacity and Structural Strength for same Dimensions — Lesser Cost of Construction

BY WILFORD G. BARTENFELD



Channell steel hopper dump scow of tunnel type for the State of New York—Capacity 125 cubic yards

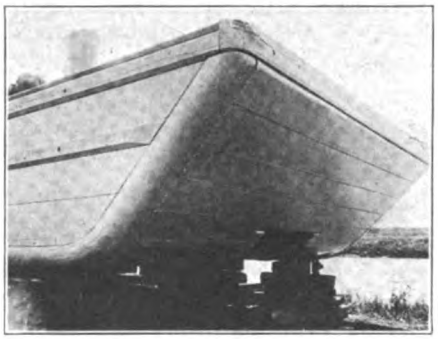
THE Channel Steel Barge Co., Rome, N. Y., is the pioneer in the development of the channel steel system of hull construction, patented by Mr. Louis Henley, and this company has up to the present time turned out four different types of hulls, under this system.

The first channel steel hull constructed was completed in 1922, and this vessel was a 500 tons hopper sand barge, 116 feet long, 22 feet beam and 10 feet 6 inches molded depth. This first hull, however, was not constructed entirely of steel channels, as a 6-inch piece of yellow pine planking was placed between each strake of channel, and the fastening bolts were run through the wood planking and flanges of the channels. Before this hull was launched, it was allowed to rest on just the end blockings, 95 feet between the blocks, for 24 hours, and it was also balanced on just the midship block.

No signs of deflection or straining were noticed in either test. This first hull, a combination of steel channels and wood construction, proved so successful, that soon after its completion and trials the state of New York placed an order with the Channel Steel Barge Co. for an all steel hopper dump scow of tunnel type, and of 125 cubic yard capacity. This scow is 100 feet long, 22 feet beam and 5 feet 6 inches depth. The channels used in the dump scow are 15 inches in width by 33.9 pounds per foot and of structural steel section. Those used in the first hull were 12 inches by 20.7 pounds per foot structural steel channels. Both the sand barge and the dump scow have been given hard usage and each hull has lived up to expectations and guarantee.

A Variety of Hulls Built

The next hull to be constructed under the channel system was a small ferry boat 40 feet by 16 feet by 5 feet. This was also constructed entirely of structural steel channels of 12 inches by 20.7 pounds per foot scantlings. This boat has been in service for about four months, and the owners state that she has given excellent service.



END VIEW OF HOPPER DUMP SCOW SHOWING TUNNEL AND CHANNEL STRAKES

The latest and fourth hull turned out under this system is a deck lighter for the United States war department, corps of engineers. It is 100 feet in over all length, 30 feet beam, and 6 feet molded depth, and has a 1 foot sheer at both ends. There is one watertight centerline bulkhead, and four transverse watertight bulkheads. This lighter is made entirely of 12 inches by 20.7 pounds per foot structural steel channels, with the exception of those used in the bilge, which are 15 inches by 33.9 pounds per foot structural steel channels. This lighter has recently been placed in commission on the Niagara river, and it is expected that her performance will quite equal that of the previous hulls.

One of the outstanding features of these hulls, is that no riveting passes through the outer shell. The decks, sides, bottom, and ends of the outer shell are as smooth as a plastered wall. This will of course reduce the hull resistance to a small extent, will render the hull less susceptible to damage than with the usual construction, as there are no butt straps, and because the flanges of the channels on the inner shell form longitudinal and transverse girders which give tremendous stiffness and offer great resistance to buckling. The absence of riveting through the outer shell of course makes the hull less susceptible to leakage, and no rivets can be started by the hull rubbing against docks or concrete walls. The corners of the hulls at the deck and bilge are rounding and formed by bending the webs of the connecting channels to any desired arc. This

The author, W. G. Bartenfeld, Lorain, O., is the Great Lakes representative of the Channel Steel Barge Co., Rome, N. Y.

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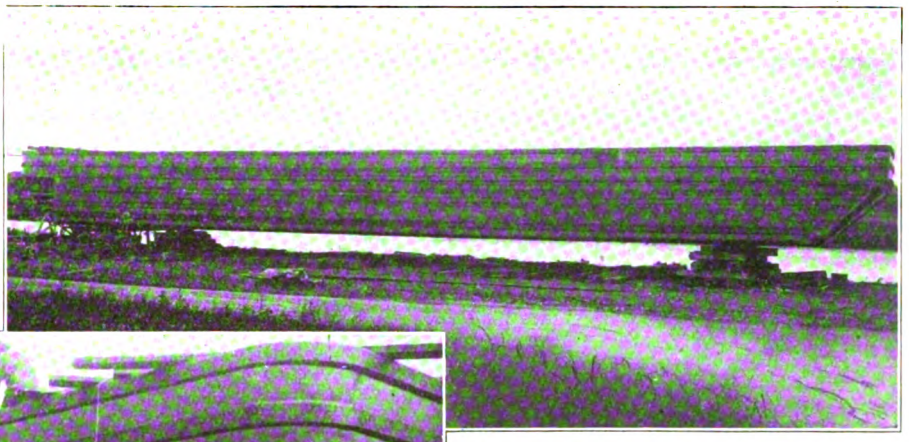
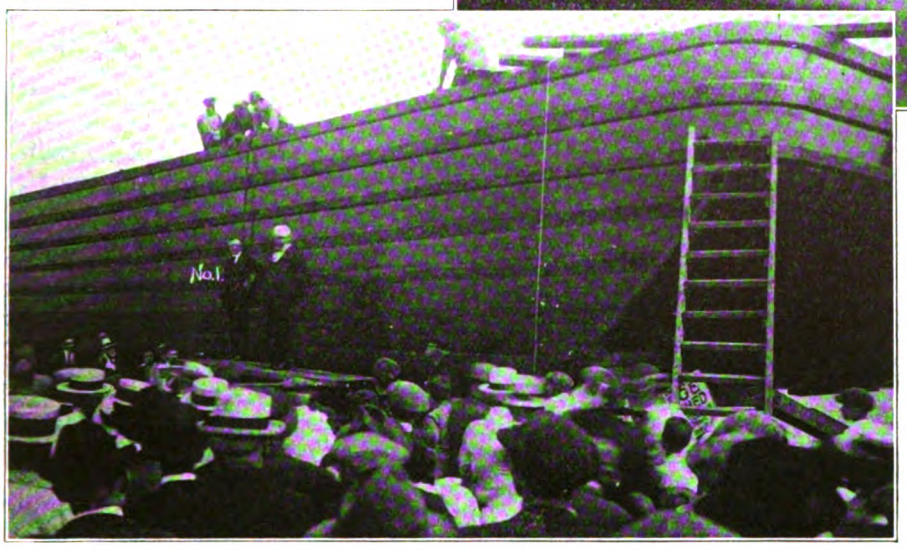
method gives a little added strength, permits the construction to be carried unbroken throughout the entire cross section of the hull, and the various degrees of arc to which the corner channels can be curved, permits of any desired beam or depth of hull.

Another outstanding advantage of this system is that the flanges of the channels can be either bolted or riveted together. It has been desirable, particularly in small hulls, to use bolts to tie the flanges together, because it can be done more cheaply than riveting, as unskilled labor can be used, and no expensive equipment is required. Bolting is also desirable when a small hull is to be fabricated and shipped knocked down into remote regions. The bolts are also an advantage, if an owner desires to construct such a hull himself, in a minimum amount of time and expense.



500-TON HOPPER SAND BARGE SUPPORTED ON END BLOCKS 95 FEET APART WITHOUT SIGNS OF DEFLECTION OR STRAIN

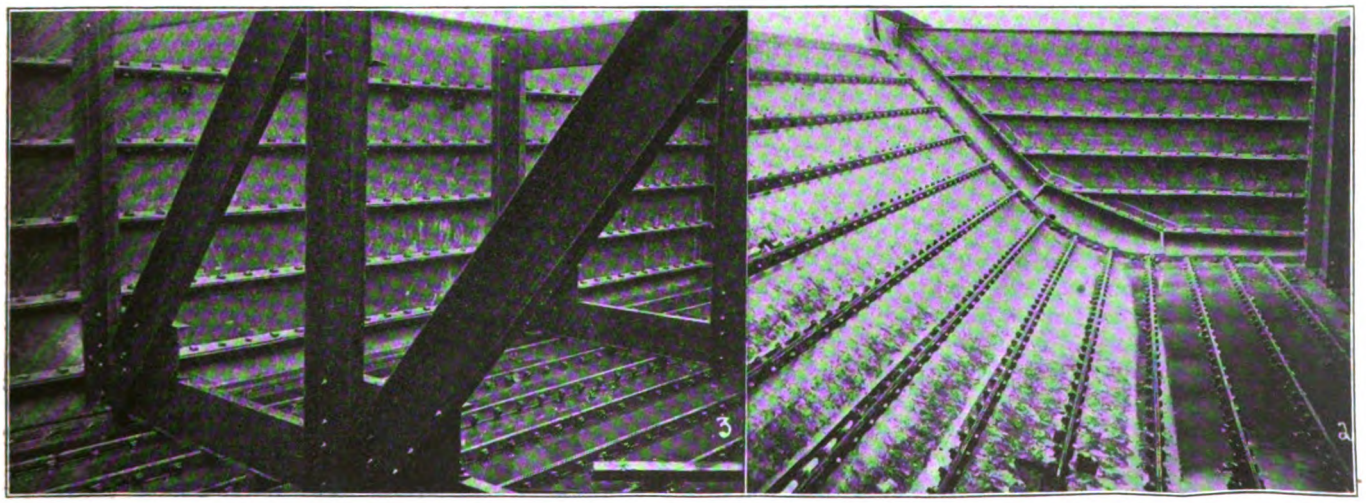


500 TONS HOPPER BOTTOM SAND BARGE—116 FEET LONG BY 22 FEET BEAM BY 10 FEET 6 INCHES DEEP. CONSTRUCTED OF ALTERNATE STRAKES OF 12 INCHES STEEL CHANNELS AND 6 INCHES YELLOW PINE

All four of the hulls constructed to date have the channel flanges bolted together. The bolt spacing in the first hull constructed was 8 inches between centers and on the last three hulls 6 inches between centers. As compared with a riveted job where the pitch is generally 3½ diameters there is practically only one-half the amount of punching and bolting in this system. However, in large hulls rivets will be used, and the pitch will be governed by the type of hull, and the work the vessel is expected to perform.

Considerable experimental work has been carried out by the company in perfecting the seams, formed by the channel flanges. Flanges and seams have been set up in many ways: steel against steel, and, with wood, tar paper, cotton felt and other non-metallic fillers between the flanges. The best results were obtained by using a thin strip of cotton felt in the seams, and this method will be carried out in all new construction work. Tar paper also showed up well between the seams, but it did not have as much resiliency as the cotton felt. As tar paper is used extensively in modern plate vessel construction, it can be used equally as well in the channel system. In fact all the four hulls completed have the strip of cotton felt filler in the seams between faying surfaces. The reasons why this method was chosen may be enumerated at follows:

The flanges of the channels do not run smooth and even, and there is considerable roughness on the faying



LEFT—CHANNEL CONSTRUCTION OF SIDES, BOTTOM AND FRAME TRUSSING AT 9 FEET SPACING WITH NO INTERMEDIATE FRAMES. RIGHT—INSIDE END VIEW U. S. ENGINEERS LIGHTER, SHOWING METHOD OF CONNECTING SIDE TO BOTTOM AND END WITH NO RIVETS THROUGH OUTER SHELL

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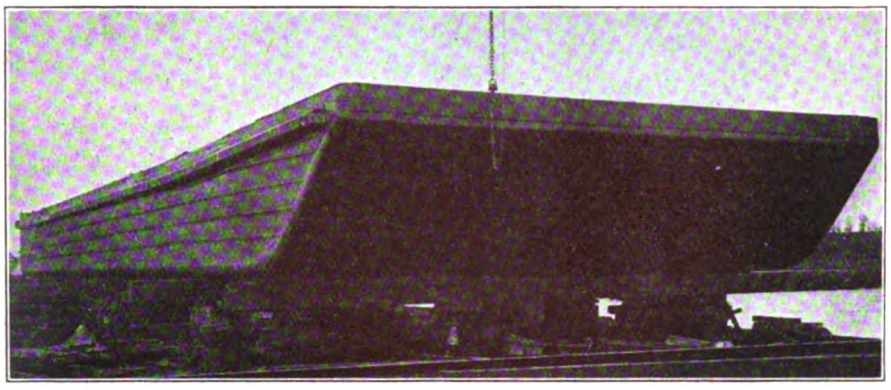
surfaces of the flanges. In fact, considerable tolerance had to be allowed in the seams, on account of this condition. With two rough surfaces either bolted or riveted together, without any filler between the flanges, a watertight job was not obtained. Pressing some of the rough spots out, made a little difference, but there were a great many that could not be pressed out. The time and work required to do this extra pressing was considerable, and added no small amount to the construction costs.



ALL STEEL CHANNEL DECK LIGHTER FOR U. S. ENGINEERS, COMPLETED AT ROME, N. Y., JUNE, 1925. NOTE SHEER AT ENDS.

By using a thin cotton felt strip between the flanges, any of the channels just as they came from the mill, could be used and a watertight job could be assured with either bolts or rivets. It was also found that the rivet pitch could be increased that required for a steel to steel job where the pitch was 3½ diameters and still secure an absolutely watertight job. This of course eliminates one-half of the punching and riveting otherwise required, and of course reduces the punching and riveting costs in direct proportion.

Should there be any spring in the hull, or an unequal contraction or expansion in the channel metal, this thin layer of felt, which has considerable resiliency, will automatically expand to meet this condition, and keep the seam watertight.

By using the thin felt layer or tar paper, no chance is taken on the seams not being watertight, and thus a far greater factor of safety is obtained.

The spacing of the frames in the hulls already constructed, has been about 9 feet and has proven ample under all conditions. Any desired frame spacing however can be used. The frames have all been of channel steel and of the same size as those used in the shell.

These frames have been clipped to the channel flanges forming the inner shell girders, to eliminate any riveting through the outer shell. However, if desired, the frames can be cut out to take the channel flanges, and the flange of the channel frames may be riveted to the webs of the shell channels. Or the channel frames without cutting, can be angle-clipped to the webs of the shell channels.

No butt straps have been used, and the few channel butts have been well staggered. The welding of the butts has proven very satisfactory. Very little bolting up is required even in a riveted job, under this system.

This channel system is especially adapted for tank tops and side tanks, due to its greater buckling resistance, watertightness, and the minimum number of rivets which would come in contact with heavy clam shells. Such a tank system placed in an old hull, will also add additional strength to the vessel. The construction is adaptable for any type of cargo carrier. The advantages of the channel steel system are: greater strength with larger dead-weight capacity; lower construction costs and less depreciation; adaptability for easy fabrication and for shipments in knocked down condition; stronger and cheaper side tanks and tank tops.

As the lowering of lake levels still steadily continues it is of vital importance to transportation on the Great Lakes that measures be taken to build ships of the greatest possible dead-weight capacity on a minimum draft. The channel steel system of construction due to the saving in weight for the same strength of hull, represents an important step in the solution of this problem.

Norris R. Sibley, formerly with the Westinghouse Electric & Mfg. Co., has recently joined the B. F. Sturtevant Co. in its sales organization. Mr. Sibley is located in the New York office of the company and has charge of steam turbine sales in this district.

Positions Are Open for Engineers

The United States civil service commission announces an open competitive examination for Engineer at $3,800, Associate Engineer at $3,000 and Assistant Engineer at $2,400.

Receipt of applications for the positions listed will close October 20. The examinations are to fill vacancies occurring in the Federal classified service throughout the United States. At present there are two vacancies in the position of assistant electrical engineer, bureau of mines, for duty at Pittsburgh, Pa., and one vacancy in the position of associate engineer (naval architecture) in the bureau of construction and repair, navy department.

Full information and application blanks may be obtained from the United States civil service commission, Washington, D. C., or the secretary of the board of United States civil service examiners at the post office or customhouse in any city.

New York City To Build Ferry Boat

W. W. Mills, commissioner department of plant and structures, City of New York, is expected shortly to have completed plans and specifications for a new ferry boat, the appropriation for which is $810,000. The over all length will be 264 feet and the beam will be 66 feet.

HAROLD BATES

Mr. Bates, as announced in the September issue of MARINE REVIEW, recently joined the sales department of the Bridgeport Brass Co.

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U. S. Accepts Australian Steamship Inspection

By authority of the secretary of commerce in department circular number 292, dated August 7, 1925, the United States has entered into reciprocal relations with the Commonwealth of Australia as regards the inspection of steam vessels carrying passengers. The laws of Australia relating to the inspection of passenger steam vessels approximate those of the United States. The certificates of inspection of passenger steam vessels of either country will be accepted by the other country only upon such inspection as will satisfy the inspectors that the condition of the vessel, her boilers, and live-saving equipments are as stated in the vessel's current certificate of inspection. Passenger vessels of New South Wales were previously granted reciprocal inspection. Such vessels hereafter granted reciprocal inspection will be classed as Australian vessels.

To Build Two Passenger Vessels

Specifications have been sent out to various shipyards by the Ericsson Line, Phila., which operates steamships between Baltimore and Philadelphia, for two steel ships for their services. These ships are to be 245 feet long, 47 feet beam, and are to have a speed of 15 knots. Comfortable sleeping accommodations must be provided for 200 passengers under usual conditions, and under extraordinary conditions room to sleep 1500 passengers must be arranged for. Bids were to be opened by President McDonald of the Line in his office in Philadelphia, Sept. 21, 1925. The outcome of these bids was not known at the time of this writing.

The Washington office of the MARINE REVIEW has been moved to 401 Westory building, where larger and more satisfactory quarters have been secured. Mr. Fred B. Pletcher, Washington representative of MARINE REVIEW will consequently be in a better position than ever to be of service to all of our friends.

Great Lakes Towing Co. To Build Two Tugs

The large fleet of the Great Lakes Towing Co. is to be increased by the addition of two new harbor tugs to be ready for the season of 1926. The new boats will be built at the company's own shipyard and repair plant in Cleveland and will be duplicates of the WASHINGTON and the BALTIMORE turned out at this yard during the past season. It is estimated that about 500 tons of steel will be used in the construction of the two new tugs.

Canada To Build Largest Lake Steamer

Midland, Ont., is to have the honor of being the birthplace of the largest lake steamer yet constructed if plans now under way are continued. Drawings and specifications have been completed for a vessel 633 feet in length over all, 70 feet in beam and 29 feet in depth. She is to be built by the Midland Shipbuilding Co. Some of the steel has already been ordered and it is expected that work will start early in November.

Dinner Given in Honor of Admiral Benson

On the occasion of his seventieth birthday, Sept. 19, Rear Admiral William S. Benson, retired, was honored for his fifty years of service to the nation in the navy, and as a member of the United States shipping board, at a testimonial dinner tendered him in Washington.

The dinner was given under the auspices of the committee of one hundred, headed by Curtis D. Wilbur, secretary of the navy, as chairman and including many persons prominent in the public and private life of the country.

Addresses were delivered by Newton D. Baker, former secretary of war, and the Right Rev. Hugh C. Boyle, Bishop of Pittsburgh.

Spedden S. B. Co. Deliver Ferry Boat

A steel ferry boat just completed, at a price said to be $100,000, by the Spedden Shipbuilding Co., Baltimore, and designed by Eads Johnson, has been delivered to W. T. Ashe, owner and operator of a ferry service between Gloucester Point and Yorktown, Va. The new ferry has been named York.

John W. Brophy, former treasurer of the Eastern Steamship Co., died recently at his home in Boston.

Ward Line May Build Two New Ships

It has been reported that the Ward Line, New York, may build two new combination cargo and passenger vessels for its Cuban and Mexican trade. If these plans go through it is said that these ships will be among the finest of their size in the world. Their accommodations and machinery will be of the latest most modern type and a speed of over 20 knots is contemplated.

The Eastern Steamship Co. has revised its old inquiry for two passenger and cargo vessels for the Boston-Yarmouth run and now has taken revised bids. These two vessels involve a total of about 5000 tons of steel.

First of New Freighters Named James Pickands

The first of the two 600 feet steamers now under way for the Inter-Lake Steamship Co., Pickands, Mather & Co., managers, at the Lorain yard of the American Shipbuilding Co., to be launched will be named in honor of Col. James Pickands. She will be the second freighter named for Col. Pickands. The first was a small wooden steamer built many years ago.

Capt. Edward W. Dixon, master of the fishing steamer KING PHILIP of Boston, and one of the best known men in local shipping circles, died recently at his home in Norwell, Mass.

Becomes Sales Manager Linde Air Products Co.

L. M. Zimmer has been appointed general sales manager of The Linde Air Products Co., manufacturers of oxygen, and of the welding gas division of The Prest-O-Lite Co. Inc., manufacturers of dissolved acetylene, succeeding L. M. Moyer, who resigned Aug. 1, 1925.

Mr. Zimmer entered the employ of The Linde Company nine years ago as junior salesman, and has steadily risen in rank. Most of the time he has represented the company in the Central West, coming to New York early in 1924 to act as assistant general sales manager.

James Griffiths, well known Pacific coast shipping man, has been appointed general manager of the Alaska Transportation Co., Seattle.

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From the Old Log Book

Stray Items About the Great Lakes, Atlantic, Pacific and Gulf Coasts and Inland Rivers from MARINE REVIEW Files of 10, 20, 30 and 40 Years Ago

OCTOBER 1885

THAT an oversupply of ships is not an altogether new and unheard of condition is clear from an item taken from the *Marine Record* (then the name of MARINE REVIEW) Oct. 1, 1885, in which it was pointed out that in the five year period from 1880 there had been an increase of tonnage over losses of nearly two and one quarter million tons.

It was pointed out that this was one cause for the depression in shipping as commerce had not demanded such an increase and could not at the time employ it.

* * *

However desperate the situation seemed, the item went on to say, the least revival in business would soon absorb the surplus. The prosperity of shipping to-day will depend somewhat in the same way on a marked increase in business but even in the face of such a growth there is an over-supply of certain classes of vessels. While this condition lasts ship building and shipping in many trade routes must suffer.

* * *

Forty years ago an effort was made to have the Canadian parliament do away with the absurd and barbaric restrictions enforced by that government preventing American tugs and vessels from going to the assistance of vessels stranded or wrecked in Canadian waters. No one can say that we have not moved a long way from such a childish arbitrary and narrow-minded idea of international comity.

OCTOBER 1895

THE year 1895 was a good one for the vessel owners and operators of the Great Lakes. Rates for carrying ore went up to $1.50 per ton and contracts for 1896 were taken at $1.25 per ton. The much smaller and slower vessels and longer time in loading and discharging in those days must be taken into account in comparing the rates of 70 cents per ton prevailing to-day. However, capital, labor and all other costs have gone up tremendously in the past thirty years so that the present rates are really too low.

* * *

An account is given of a large cargo shipped from Boston to Liverpool in the big Atlantic freight steamer Victorian then recently completed. Her cargo consisted of 155,000 bushels of grain, 1800 tons of flour, 1100 tons of provisions, 800 tons of resin, 5300 bales of cotton, 500 tons of leather, 260 tons of dressed beef, 100 tons of lumber and 75 tons of hay and feed for cattle. Finally at the last moment 654 head of cattle and 1591 sheep were loaded. The weight of the cargo was 12,000 tons and the vessel was loaded in ninety hours. The amount of cargo and the speed with which it was loaded would be considered very good at the present time. In the years that have passed, have the nature and quantity of the products shipped from Boston changed materially?

OCTOBER 1905

IN AN editorial in MARINE REVIEW 20 years ago it was pointed out that Secretary of War Taft had recommended the postponement of the application of the coastwise laws to the Philippines for five years. The contention was that there were not enough American ships to care for the trade. It was suggested that it would be well to put this law into effect, and so, discover by actual trial whether there were any vessels available.

* * *

Twenty years have now passed since this was written and in spite of a specific provision in the merchant marine act of 1920 that the President is empowered to declare the Philippines in the coastwise category no action has yet been taken. The reasons are much the same with the additional ones of fear that the Philippines themselves and our foreign shipping friends would not take kindly to such enforcement.

* * *

A fine record for a sailing vessel was noted in Marine Review for October 26, 1925. The four masted schooner Hope Sherwood made the trip from Sandy Hook to Fernandina, Fla. in 2 days, 19 hours and 10 minutes, a distance of 734 miles. A favorable wind straight over the stern for the entire trip made this exceptional record possible.

OCTOBER 1915

THAT the Great War had already begun to materially and very favorably affect the earnings of various established steamship lines is clear from an account given in MARINE REVIEW for October 1915 of the statement of the International Mercantile Marine Co. for the first six months of 1915. During this period the earnings of the company though in the hands of a reorganization committee was $11,000,000. This was at the rate of $22,000,000 a year as compared with average net earnings of $2,656,387 per year for the six years period 1909 to 1914.

* * *

In view of the astonishing fact brought out recently by Captain Dollar that Shanghai is the second largest port in the world it is interesting to note that ten years ago the average stevedoring charges for vessels loading and unloading outside the red buoy at Woosung were only about 15 cents per ton. The lighterage charges from Woosung to Shanghai were approximately 40 cents per ton. In addition to the foregoing there was a charge for wharfage expenses on cargo landed, ranging from three cents per package upward depending on their size and weight.

Cheap and plentiful labor and reasonable port charges are important factors in building up any port and Captain Dollar's warning to the port of Boston ought not to go unheeded.

It seems that when Captain Dollar returned a short time ago from his last round the world trip on the President Garfield he was entertained by the maritime fraternity of Boston. He told his hosts bluntly that they would drive shipping away from their port if they continued the present policy of imposing heavy dues and port charges.

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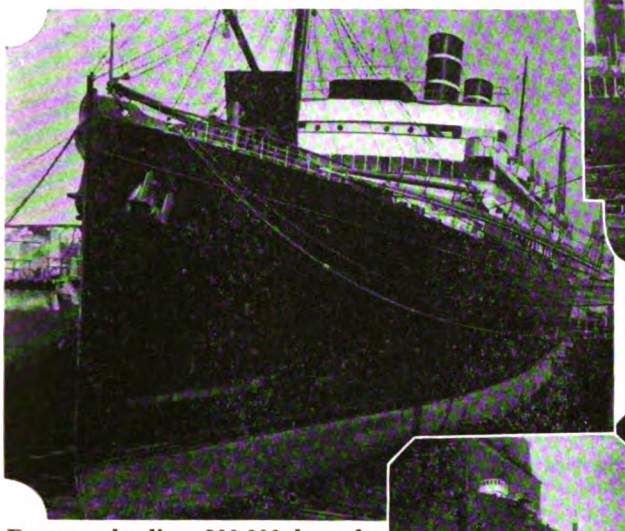
Photographs from Far and Near

Ward liner Orizaba in dry dock at Morse Dry-dock & Repair Co., Brooklyn, N. Y., for a final bottom cleaning and painting after elaborate reconditioning. Re-entered service from New York to Havana May 16, 1925.



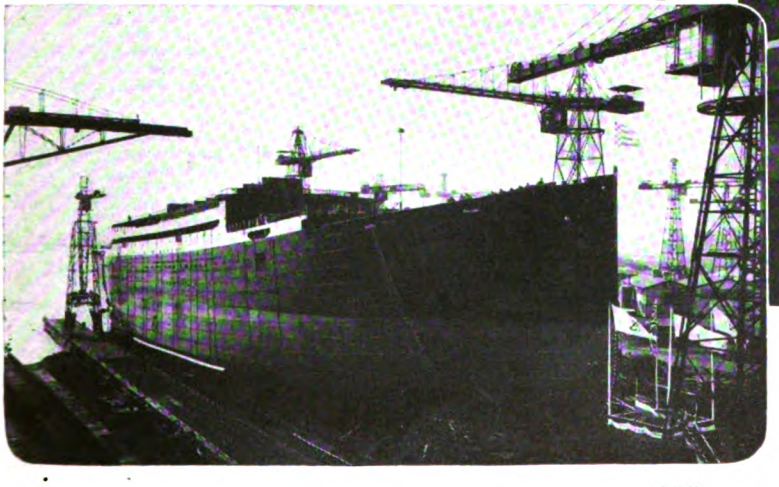
Pegasus loading 200,000 bu. of wheat at the Rialto elevator, Chicago.

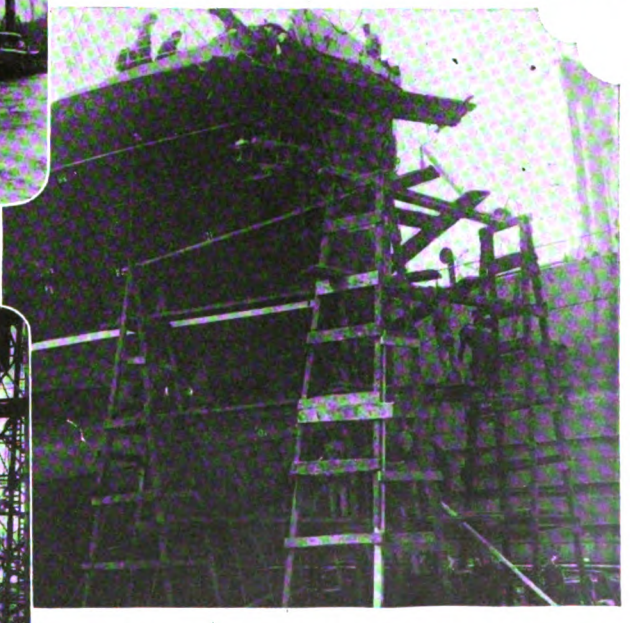
Large twin screw diesel tanker, Zoppot in dry dock for general repairs. Built in Germany for the S. O. Co. of N. J.

A busy scene as the tanker Montrolite flying the American flag, leaves the Morse yard.

Liner Seminole, launched at Newport News April 14, 1925. Barbara Stone, daughter of Galen L. Stone, of the Clyde Line, was the sponsor.

On May 24, 1925 the North German Lloyd steamer Berlin was christened and launched at Bremen-Vegesack. She is a modern 15,000 gross tons passenger and freight liner.





The contract for the repair of the Red Cross Line steamer Rosalind, damaged by collision with the tanker Harvester on Aug. 22, 1925 was awarded to the Robins plant, Brooklyn, of the Todd Shipyards Corp.

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Late Decisions in Maritime Law

Legal Tips for Shipowners and Officers

Specially Compiled for Marine Review
By Harry Bowne Skillman
Attorney at Law

A TIME charterer, which, during the charter period, desiring to use the vessel for a voyage prohibited without the owner's consent, negotiated for such consent, meantime holding the vessel for such voyage, was held, in the case of New York & Cuba Mail S. S. Co. v. Salvesen, 298 *Federal Reporter* 625, not entitled to deduct from the charterer hire for the time so lost.

* * *

An action for negligent injury to a stevedore on a ship in a port of a foreign nation is governed by the law of that nation.—SAMNANGER, 289 *Federal Reporter* 260.

* * *

A collision in New York harbor on a clear day, under conditions most favorable for navigation, between two steamships on crossing courses, held, on conflicting and unsatisfactory testimony, in the case of TENADORES, 298 *Federal Reporter* 740, due to faults of both vessels; the burdened vessel for signaling for the other to give way at a time when only instant acquiescence could avert collision, and the other for not instantly acting on such signal, which might have prevented the collision instead of which she gave a cross signal and continued her course and speed.

* * *

The duty imposed by act of March 3, 1899, § 15, on the owner to mark a wreck with a buoy a beacon during the day and a lighted lantern at night, cannot be delegated.—Elizabeth Co., Inc., v. Mesick & Mesick, Inc., 298 *Federal Reporter* 743.

* * *

Under charter of a vessel for "about" five years, terminating "about" Feb. 23, where the cargo was discharged Jan. 19, and it appeared that necessary repairs would not have delayed sailing beyond Feb. 1, and that another voyage could have been completed by March 11 to 15, overlap being shorter than underlap, the owner was not entitled to withdraw the vessel for Lloyds' classification survey, which would prevent another voyage within the term. "Classification does not make a vessel seaworthy," said the court in the case of NEGUS, 298 *Federal Reporter* 749, "nor the absence of it make her unseaworthy." This is true, though failure to submit to classification survey would result in the vessel's classification being expunged, which could be restored by a subsequent satisfactory survey.

* * *

If the cause of delay, beyond the charter time, in loading a cargo of lumber, was the character of the cargo, the charterer is liable for demmurrage; if, however, a ship is incapable of receiving cargo at the rate provided in the charter party without working overtime, the owner is not entitled to demmurrage for the delay, it was held in the case of Bahamas Cuban Co., Inc., v. Southern Export Co., 298 *Federal Reporter* 596, but should have employed additional men to assist in loading.

* * *

"When a person is injured in passing over a ladder connecting a vessel with the shore, the admiralty has jurisdiction if he is injured, that is, wronged, before he is entirely free from the ship and has safely reached the shore. If he is passing from the shore to the ship, the admiralty has not jurisdiction until he has reached the ship, and is entirely separated from the shore."—ATNA, 297 *Federal Reporter* 673.

* * *

A number of interesting holdings with relation to lay days were made in the case of SKOMVAER, 297 *Federal Reporter* 746, among which are the following: (a) In computing lay days, Sundays and legal holidays are excluded, and whole days only, and not fractions, are counted; (b) where the charter party defines the time when the lay days shall begin to run, the master has no authority to alter it; (c) under a charter party providing that lay days shall begin to run when master gives charterer notice, a notice given before the ship was ready for loading and had finished discharging would have been ineffective; (d) the fact that loading is interfered with by storms does not prevent the running of lay days; (e) days on which a ship was being repaired were not lay days for purpose of determining demurrage, the ship not being ready to receive the cargo on such days; (f) where charter party provided that lay days should "count from the time the captain gives notice," and the captain in fact gave notice as soon as the ship was ready, the lay days began to run from the time of such notice, though the charterer began to load the vessel several days prior thereto; (g) the mere fact that a vessel had failed to keep a winch in order as required by the charter party did not justify exclusion of days on which said winch was not in order from the number of lay days, in the absence of a showing that loading and discharging were interfered with thereby; and, (h) the time during which unloading of cargo was stopped to enable the owner to take on new cargo from a lighter as stiffening for another voyage, with which the charterer was not concerned, was not lay days for which charterer was liable for demurrage.

* * *

In the absence of a stipulation to the contrary, a shipowner absolutely warrants that his ship is seaworthy in all respects, and not merely that he has used due diligence to make her seaworthy, regardless of his knowledge or ignorance, of his care or negligence, it was held in the case of TURRET CROWN, 297 *Federal Reporter* 766. It was further decided that the mere fact that a vessel encounters heavy weather is no defense to claims for damages to cargo, if any defect or unseaworthy condition of the ship existed, and that where it became necessary for the safety of the ship, crew, and cargo to seek a port for repairs, there was no such "deviation" as would deprive the ship of the benefit of protective provisions of the bills of lading, "deviation" being a voluntary departure, without necessity or any reasonable cause, from the regular or usual course of trade.

* * *

The insurer is subrogated to the rights of the shipper against the carrier, in the absence of anything to the contrary contained in the bill of lading; but, ordinarily, if the bill of lading gives the carrier the benefit of the shipper's insurance, the insurer is not subrogated. Where a policy is void by agreement if the insured makes a covenant to give the benefit of his insurance to the carrier, the insurers, it was said in the case of TURRET CROWN, 297 *Federal Reporter* 766, can require the assured to sue the carrier first, and can decline to indemnify him until the carrier's liability is determined.

* * *

A collision caused by the breaking loose of a moored vessel, by the breaking of a sufficient mooring post, and where the vessel's fasts were adequate in number and condition, in weather which was not extraordinary and in which no other similar accidents occurred, cannot be attributed to inevitable accident, but raises a presumption of fault on the part of the vessel.—HOLLANDIA, 297 *Federal Reporter* 838.

* * *

An inquiry of the agent, ordering repairs for a steamship, as to its ownership, which was not answered, was held, in the case of CASTLEWOOD, 298 *Federal Reporter* 184, to be not the exercise of such reasonable diligence as to entitle the repairer to a lien, where, by the terms of the ship's charter, the charterer was without authority to bind the vessel.

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Equipment Used Afloat, Ashore

New Propeller Log Gives Revolutions per Minute for Each Shaft and Average—Also Gives Speed Corresponding to the Average Revolutions

HE knows his ship, is an expression which is often heard. The essential meaning of this phrase applied to the navigator is that under any given conditions he has, through experience with a particular vessel, acquired a sort of sixth sense as to how she will behave under varying weather and tide conditions for certain engine speeds and position of helm. Having this knowledge he will without hesitancy signal the engine room for any degree of speed required ahead or astern. In the engine room the signals for varying speeds ahead or astern mean only one thing, and that is, varying the engine revolutions in either direction.

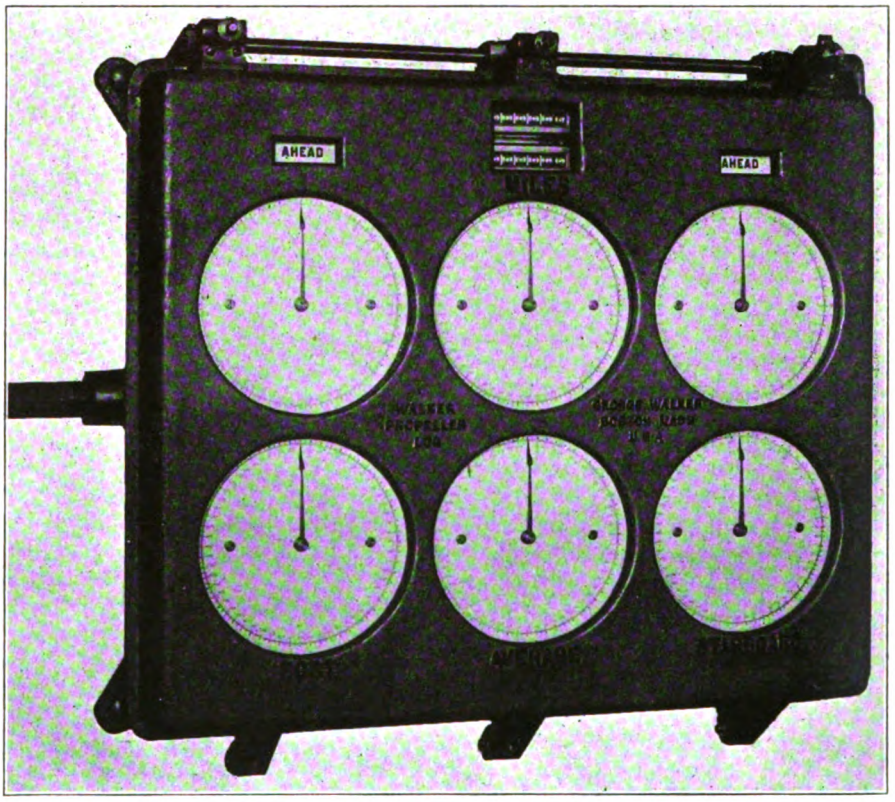
The real basis for this knowledge of the ship is therefore the number of revolutions of the propeller. A really practical and accurate revolution counter would consequently be of inestimable value to the navigator in asking for, and the engineer in giving, the correct speed. Furthermore the navigator could with the help of such an instrument learn to know his ship with much greater precision.

After a ship has been standardized, which is done for navy vessels on their trial trips by making a great number of runs over a measured mile course from the lowest to the highest speeds, and which may be done for merchant ships as a matter of observation during working conditions, a definite relation is established between the number of revolutions of the propellers and the speed of the ship, due allowance being made for tide, weather, loading and condition of the bottom. Sufficient experience with a ship will therefore establish an accurate relation between the propeller speed and ship speed under any conditions.

Hence the primary problem is to determine the propeller revolutions, and where there is more than one propeller, the average revolutions accurately and in a practical manner so that this figure for each minute is constantly before the eye of the navigator. Secondly, to furnish the navigator with the actual speed of the ship in knots corresponding to the revolutions according to that particular vessel's ratio of speed to revolutions.

George Walker, an inventor of Boston, after several years of study and experiment has perfected an instrument for determining the revolutions of each propeller, the average revolutions when there are two or more propellers, and the corresponding speed of the ship. The writer witnessed an entirely successful shop test of this apparatus in Boston. A sea trial is soon to be made and there is every reason to believe that this will be equally successful.

The accompanying illustrations and the following description were furnished exclusively to MARINE REVIEW through the courtesy of Mr. Walker.



A COMPLETE INDICATING UNIT OF THE PROPELLER LOG FOR A TWIN SCREW SHIP—THE TOP ROW POINTERS WILL MOVE FOR ONE MINUTE AND THEN STOP FOR ONE MINUTE DURING WHICH THE LOWER ROW POINTERS MOVE, AND SO ON—THE POINTERS WHICH FOR THE TIME BEING ARE STATIONARY POINT TO THE READING FOR REVOLUTIONS OF THE PRECEDING MINUTE

The instrument is electrically operated and is absolutely automatic in all its functions. When the operating switch is closed, the instrument starts, and automatically adjusts itself, (no matter in what positions the parts may be at the time of starting), and operates continually recording correctly at any and all speeds until the operating switch is opened. It shows, minute by minute, the exact number of revolutions of all the propellers, thus showing continuously for the minute just elapsed the number of revolutions of each propeller and the average number of revolutions of all the propellers.

From the average propeller speed per minute, the distance the ship has traveled is computed and the miles traveled is continuously recorded. The mileage counters may be reset to zero at any time while the instrument is in operation. The instrument is designed for ships having one, two, three, or four propellers. An instrument may be used on any ship having the number of propellers for which it is designed. The distance traveled is computed and recorded by means of two computing cams. The computing cams are designed to correspond with the propeller speed curve of the ship on which the instrument is to be used. Furthermore, the instrument can be provided with several sets of computing cams corresponding to different sailing conditions of the ship; whether she is heavily laden or

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sailing in ballast; and whether her bottom is clean or foul. The computing cams of the instrument can be changed as readily and as easily as the disks of a phonograph.

Speed of Ship also Given

The dial hands and distance counters always turn forward, whether the propellers are turning forward or are reversed and the instrument indicates in which direction the propellers are turning. It can be located anywhere desired on the ship, or any number of instruments can be used, located in different parts of the ship. The use of a single switch will start and stop all the instruments in unison. The instrument is so designed that all parts are readily accessible. Construction of the instrument is strong and simple. There are remarkably few parts, no complicated or delicate parts and few wearing parts. All electric contact points are immediately accessible, and can be quickly and easily replaced. The instrument is quiet in its operation and has a specially designed water-tight case. The case cover swings on hinges and can be quickly and easily opened or closed, and is provided with a lock ot prevent tampering with the instrument.

Two designs are furnished. The navigator's log which is the complete instrument showing the revolutions of each propeller and the average revolutions of all the propellers, minute by minute; the direction of revolution of each propeller; and the miles traveled. The engine room log, which is a smaller instrument, shows the propeller's revolutions, minute by minute, and the direction of revolution of the propellers. This instrument does not show the average propeller revolutions, nor the mileage, as this information is not required in the engine room.

Starting, stopping and resetting of the dial hands, of all instruments on a ship, is controlled by a single master clock provided with electrical contacts.

A water tight contact box is located near each propeller shaft. Each propeller shaft is directly connected to a shaft in its contact box which rotates with the propeller shaft. Electrical contacts on the shaft in the contact box operate magnetic motors in the log instruments which synchronize with the propeller shaft revolutions.

The contact boxes also contain a set of one way gears so designed that they drive the contact shaft in one direction only, regardless of the direction in which the propeller shafts rotate. These one way gears also control an electrical switch which operates propeller direction signals in the instrument. A direction signal for each propeller is provided.

A main connection box is located in any convenient place on the ship. Cables containing the required number of wires, are brought into this box from the clock and from each propeller contact box. From this connection box a main cable, containing all the wires, is taken anywhere desired on the ship. Secondary connection boxes are located along the line of the main cable wherever it is desired to take off a branch cable to an instrument; the main cable ending at the last instrument.

There are two sets of dials for recording the propeller revolutions; an upper set and a lower set. Each set has a dial for each propeller, and a dial to record the average revolutions of all the propellers. Each dial has six hundred graduations, each graduation indicates a propeller revolution. The hands of the two sets of dials operate alternately. During the first minute the hands of one set of dials (for example the upper set) will rotate; at the end of the minute the hands of the upper set will stop, indicating the number of revolutions of each propeller and the average revolutions of all the propellers for the first minute. When the dial hands of the upper set stop, the hands of the lower set start to record the revolutions for the second minute. About four seconds before the end of the second minute, the hands of the upper dials reset to zero. At the end of the second minute the hands of the lower dials stop, and the hands of the upper dials start to record the revolution for the next minute.

Continuous Record of Revolutions

The dial hands of the two sets alternately start, stop, and reset, continuously, as long as the instrument is in operation. Thus the instrument records continuously, minute by minute first on one set of dials, then on the other set the exact number of revolutions of each propeller and the average number of revolutions of all propellers. There is no interval of time between the stopping of one set of dial hands and the starting of the other set of dial hands. The same electrical contact in the clock stops one set and starts the other set.

The time during which each set of hands runs is the exact minute. The time is the exact cycle of a minute because the contact which starts and stops the dial hands, is operated by a shaft in the clock which rotates once a minute, thus insuring the recording by each set of dial hands during each exact minute without any fine adjustment.

Other electrical contacts in the clock control the resetting of the dial hands to the zero mark, ready to start recording the succeeding minute. The alternation in operation of the two sets of dial hands, and the resetting of the hands, is accomplished by the clock contacts acting through two unique relay switches in the instrument. The dial hands are reset by means of coiled clock springs.

A small synchronizing magnetic motor has been developed which is used in the instrument to rotate the dial hands. The instrument is provided with one of these motors for each propeller shaft. Each motor is operated by its propeller shaft, by means of the electrical contacts in the contact boxes previously mentioned. These motors synchronize absolutely with the propeller shaft revolutions at any and all speeds, or with any sudden or violent changes of speed.

Driven by Magnetic Motors

These motors by means of a train of reduction gears and magnetic clutches, rotate the dial hands in synchronism with the propeller shafts; so that each dial hand advances one count for each revolution of its propeller. The gears, driven by the motors, rotate continuously and each dial hand is controlled by a magnetic clutch.

At the beginning of each minute the magnetic clutches of one set of dial hands cause the hands to rotate with the gears. At the end of the minute these clutches release their dial hands, and the other set of hands are started by their clutches. When the dial hands are released by the magnetic clutches they are held against any retrograde movement by means of ball clutches.

To release the dial hands for resetting by the springs, the balls of the ball clutches are raised from operating position by means of electro magnets controlled by the clock. The average revolution dial hands are likewise rotated and controlled, through differential gearing, driven by all the motors. In the four shaft instruments the average dial hands may be operated to show the average revolutions of all four propellers, or of only two propellers.

Directly over each pair of propeller revolution dials is located the direction signal for that propeller. When the propeller is turning ahead, the word ahead shows in plain black letters. The instant a propeller reverses its direction the word *ahead*

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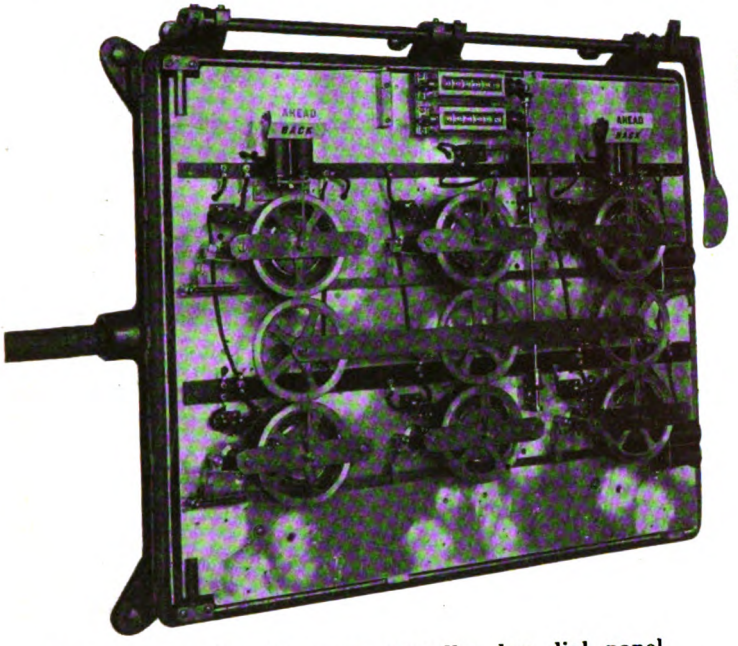
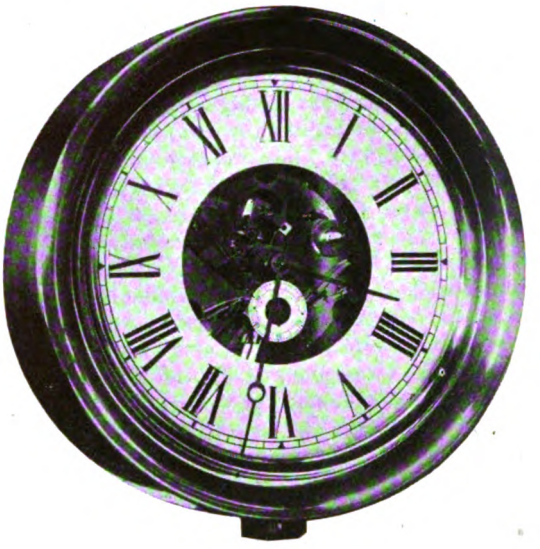
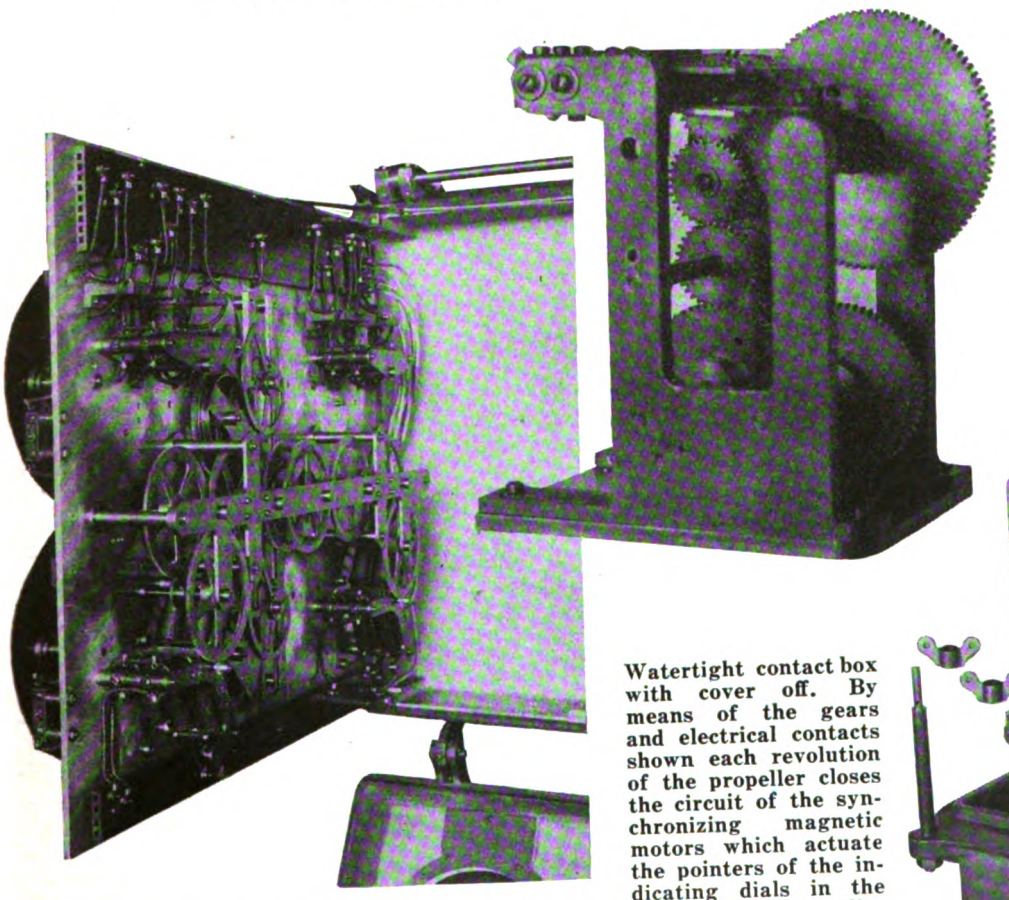
New Revolution Indicator and Log



Front view of twin screw propeller log dial panel with dial cards and cover casing removed. The mileage counters are at top center, and there is a card for direction ahead or back located over the indicators for each shaft.

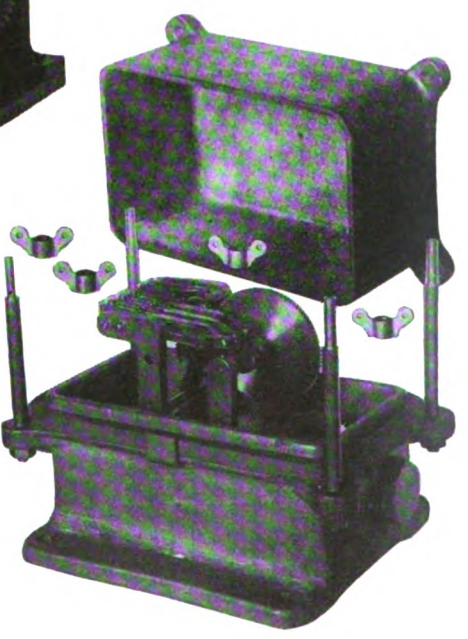
Starting, stopping and resetting of the dial hands of the propeller log is controlled by this master clock through electrical contacts.





A close up of the train of gears removed from the contact box casing. The lower right hand gear is rotated directly by the propeller shaft. The two upper of the three smaller gears shown at the left form a set of one-way gears. Either the upper or lower of these two mesh with the large gear on the contact shaft depending on which direction the propeller shaft turns and the direction of rotation of the contact shaft gear always remains the same.

Back view of twin screw propeller log indicating dial panel showing the accessibility of all parts. The synchronizing magnetic motors are shown to right and left at bottom. The speed curve cams are located on two vertical guides at the center



Watertight contact box with cover off. By means of the gears and electrical contacts shown each revolution of the propeller closes the circuit of the synchronizing magnetic motors which actuate the pointers of the indicating dials in the panel of the propeller log instrument on the bridge, in the engine room, or wherever located

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disappears, and the word *back* in red letters shows in its place. The propeller direction signals are operated by electro magnets, which are controlled by switches in the contact boxes, operated by the one way gears already mentioned.

Each instrument is provided with two mileage counters; which operate in unison. These counters can be reset to zero at any time, independently of each other. Two counters have been provided to enable the navigator to keep the total mileage on one counter and the daily run, or trip run, on the other. The mileage counters are operated by computing cams which turn the counter wheels by means of a rack and gear segment, a ball clutch, and a train of gears. Each dial hand of the instrument is mounted on the end of a shaft. On the other end of the shafts which carry the average revolution dial hands, are mounted the computing cams. Therefore the computing cams rotate with the average dial hands.

The curve of the cams corresponds with the speed curve of the ship as given in revolutions per minute. Each rise and advance of the cams will rotate the counter wheels the correct distance to register the mileage. Inasmuch as a computing cam is mounted on each average revolution dial shaft, each of the two cams will operate during alternate minutes in unison with the average dial hands, and will be reset to zero with the dial hands. Therefore the cams will alternately advance the counters the correct amount each minute, and the operation of the counters will be continuous.

Advantages of the Propeller Log

A great deal of thought, time, and expense has been expended to simplify, and standardize this instrument; with the result that there are comparatively few different parts. This log is a precision instrument. The parts are accurately made, and are of the best workmanship and material.

With the navigator's log installed on the bridge, the navigator has his ship absolutely in hand, he knows exactly what the propeller speeds are all the time, nor is it necessary to call the engine room for information, he knows constantly whether or not his orders are being carried out. If he rings for the propellers to reverse he knows the exact instant each propeller reverses; he is never in doubt as to the promptness and accuracy with which his orders are executed.

The navigator also has immediately before him, constantly, the exact distance the ship has traveled according to propeller speeds. He no longer is required to figure out the approximate average revolutions per minute and estimate the distance traveled, This feature is of inestimable value, especially in thick weather, in picking up landmarks, and making harbor, and of great assistance in dead reckoning. In the engine room the instrument is of equal value to the engineer in holding his propellers to the required speed. The engineer and the commanding officer both have exactly the same accurate, constant information as to what the propellers are doing. There can be no doubt or misunderstanding on that score.

This instrument has been thoroughly tested and proven, during the last two years. It will be shown and demonstrated at the American Marine exposition, in New York, during the week of November 9 to 14, 1925.

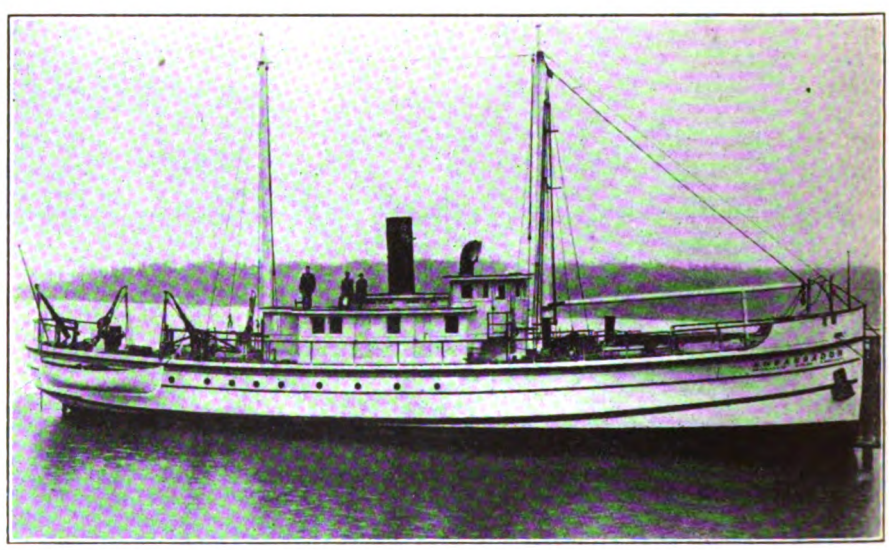
After Five Years Service

Motorship Ambassador *Makes* Successful Trip of 2500 Miles

IT IS frequently of interest to hear, from time to time, of motor ships which have been in operation for a number of years, as it brings out the dependable and economical servive which is obtained with a diesel engined vessel.

A communication from the West Coast gives some details of the motorship AMBASSADOR, a vessel powered with a 360 shaft horsepower Nelseco diesel engine. The AMBASSADOR was built by the Tacoma Shipbuilding Co. in 1919 and has the following specifications. The length over all is 112 feet, the beam over all is 22 feet, and the draft loaded is 10 feet 7 inches. Her gross tonnage is 204, the net tonnage is 122 and she has a carrying capacity of 100 tons.

On her initial trial trip she developed a speed of 11 knots in light condition. Her power equipment consists of one 360 shaft horsepower six cylinder, four cycle direct reversible Nelseco engine direct connected to the propeller shaft. The AMBASSADOR was built for the Chichagoff Mining Co., Tacoma, Wash., and was in their service until near the end of 1924, when she was sold. During this period, she was engaged in passenger and general freight carrying and rendered valuable service to her owners, especially due to her ability to go long distances on a single fueling. In the North West this is a valuable



MOTORSHIP AMBASSADOR—112 FEET IN LENGTH, 22 FEET IN BEAM—POWERED WITH ONE 360 HORSEPOWER 6-CYLINDER 4-CYCLE DIESEL ENGINE

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asset as the mining districts are frequently located a considerable distance from ports where fuel is obtainable.

Some time ago this vessel was purchased by the Inter-Island Steam Navigation Co., Honolulu, Hawaii. A survey of the engine and vessel was made before purchase and although she had passed through five very strenuous years of service, it is reported that everything was found in excellent condition. It was considered advisable to make certain repairs and adjustments to the engine, but as these were of a minor nature, it was decided to send the boat to Honolulu before effecting same.

Mr. F. Hons, assistant manager of the Inter-Island Steam Navigation Co. in commenting upon the AMBASSADOR and her trip of 2500 miles said in part: "The mine tender AMBASSADOR after an uneventful trip of 12 days and 18 hours, arrived at Honolulu on Oct. 31, 1924. We are very much pleased with our purchase and feel that we will get good service from this vessel on account of her combined freight and passenger and towing facilities. According to the chief's statement to us, the engine performed perfectly during the entire trip no stopping of the engine having been necessary, except just a few hours prior to her docking when the breaking of a belt caused the shutting down of the engine for the purpose of belt replacement."

The transference of the AMBASSADOR to eastern Pacific waters should further, to a large extent, the acceptance and use of diesel engines in the Islands.

Former Passenger Vessel is Converted

THE reconditioning and conversion to a freight vessel of the steamship EL COSTON has recently been completed at the plant of the Robins Dry Dock & Repair Co. This vessel, 445 feet in length over all, by 57 feet in beam, and 37 feet 6 inches in depth, formerly known as the steamship BIENVILLE, was built for the Southern Pacific Co. at the Todd Dry Docks and Construction Corp. plant, Tacoma, Wash., in 1924.

She was the last word in modern passenger ship design for the coastwise trade and was equipped with every known convenience both for the safety and comfort of passengers and crew. In March 19, 1925, while on her second regular voyage between New York and New Orleans, she caught fire while at the latter port and her entire superstructure and passenger accommodations were destroyed.

Officials of the Southern Pacific Co. surveyed the damaged vessel, wrote specifications for reconditioning her as a freight ship, and the Robins plant of the Todd Shipyards Corp. was the successful bidder. One of the stipulations of the contract was that the contractor should move the damaged ship from New Orleans to his plant. This in itself was a problem of no little magnitude, but the transfer was accomplished with the facilities possessed by the Todd organization without untoward incident.

Temporary repairs were made to the vessel's hull and to such of the machinery as was affected by the fire. Ports and windows were blanked, the pilot and chart houses were rebuilt. A new steering control system and a communicating system between bridge and engine room were installed. These and many other temporary repairs made possible the safe delivery of the vessel to the Robins plant in Brooklyn.

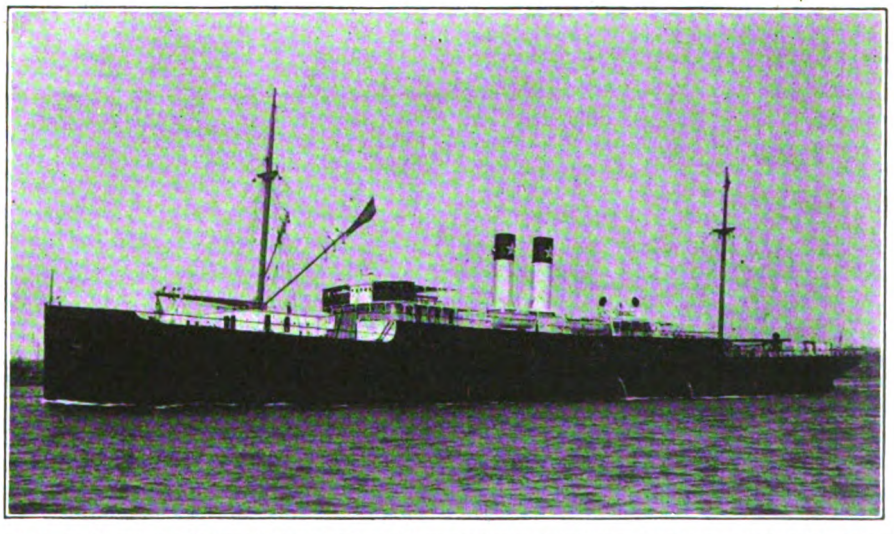
The tremendous work of cutting away her entire superstructure and passenger accommodations was begun immediately on her arrival. Her lower-most passenger deck was removed and completely rebuilt, both smoke stacks, fiddley, engine and boiler casing were entirely removed and rebuilt. The main mast was also removed from the ship and rebuilt before replacing, as the heat had buckled it considerably.

Steerage and crews quarters below the weather deck were completely removed, together with the steel bulk heads which enclosed them. These removals required additional beams, web frames, and stanchions to be fitted to compensate for same. Practically all of the air ports in the hull proper were blanked with spigoted flush patches, new cargo ports were fitted and some of the existing ones were relocated to suit the new conditions.

All unnecessary soil, waste and other piping was removed together with the scuppers through the vessel's side and such piping as remained was encased with steel covering for protection against cargo. A new hatch was built through the after weather deck and another was relocated. The main mast was relocated, with a new mast table and cross trees and the whole completely rerigged with four new booms topping lifts, stays and shrouds.

The forward end of the bridge deck enclosure was arranged to carry cargo and fitted with two watertight cargo doors at the forward end. In the after end of this space the engineers, firemen, oilers, water tenders, and cook's quarters were constructed, as well as a mess room with adjoining pantry for the captain, officers and firemen. The galley and ship's provision chambers adjoin these quarters, the layout affording spacious and convenient quarters. The captain's and officers' quarters, pilot house, chart room, navigating bridge, hospital, and radio room were constructed above the bridge deck space.

To make a thorough job, the inner bottom tank top ceiling was removed,



THE S. S. EL COSTON (EX BIENVILLE) LEAVING ROBINS DRYDOCK OF THE TODDS SHIPYARD CORP. WHERE SHE HAS UNDERGONE A COMPLETE CONVERSION TO A FREIGHT VESSEL

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the tank tops were recoated and all holds and 'tween deck spaces were cleaned and painted. The ship was dry docked; her bottom, top sides, entire superstructures and all the quarters were painted.

Considering the extent of the work, an exceptionally good record was made in the time of delivery. The contract called for 125 days and the entire work was completed and the vessel was handed over to the owner in 105 days, 20 days ahead of the stipulated time.

Progress of S.S. Malolo

IT IS confidently expected that the new Matson liner MALOLO (Flying Fish) will be completed on time early in 1927, despite the fire early in July at the Cramp shipyard in Philadelphia. Upon his return to San Francisco from an inspection visit, A. C. Diericx, assistant general manager, said:

"The fire at Cramp's shipyard July 2 burned only the blocking and staging from underneath and around the bottom portion of the MALOLO from the after end of the forward boiler room to the forward end of the ship.

"The machinery is located amidships and the fire reached the forward end of the vessel. As only the double bottom portion was erected, with no side frames or stem in place, the total damage to the vessel, which was fully insured by the builders, amounts to less than $70,000.

"All material that was affected by the heat of the fire was condemned and has been entirely replaced by new material. It is fully expected that the reconstruction of this portion of the steel hull will be so pushed ahead that it will catch up with the midship and after portion so that there wil be no delay at all in the completion of the vessel beyond the contract date."

Reduction Gears Ordered From DeLaval

The contract for the four sets of reduction gears for the steam turbines of the S. S. MALOLO has been awarded to the De Laval Steam Turbine Co., Trenton, N. J. The MALOLO is being built under the direction of Gibbs Bros., Inc., at Cramp's shipyard, Philadelphia, for the Matson Navigation Co. She will be the largest and fastest high-powered passenger steamship ever built in the United States.

Each of the vessels four sets of reduction gears will consist of one main gear with one high pressure and one low pressure pinion mounted in the gear case. Each gear set will be housed in a separate casing. The gearing will be of the double helical type, the gear face being divided into halves with right and left hand teeth.

The gear wheels will have cast iron centers with forged steel rims shrunk on and secured by screw plugs. The gear rims will be of forged carbon steel, double annealed with a tensile strength of 65,000 pounds, elastic limit 35,000 pounds, and elongation in two inches of 32 per cent.

The pinions will be nickel steel forgings, oil quenched. They will be tempered to a tensile strength of 90,000 pounds, elastic limit of 60,000 and elongation in two inches of 25 per cent.

The approximate revolution per minute when the four sets of turbines are developing a total of 25,000 shaft-horsepower, will be for the high pressure turbines, 1450 revolutions per minute, first Intermediate pressure turbines 1450 revolutions per minute, second intermediate pressure turbines, 1450 revolutions per minute, low pressure turbines, 1450 revolutions per minute, and for the propeller, about 121 revolutions per minute.

The factor of safety will be at least five. The lubrication of the gear teeth will be by means of a series of spray nozzles arranged to deliver oil at the point where the driving teeth enter in engagement when the gear is running.

The MALOLO will be put in service on the San Francisco-Honolulu run in the spring of 1927. The speed of 22 knots will enable her to make the round trip in 8 days, cutting by 4 days the fastest time of any passenger vessel now on the run.

Need Five Acres of Teak for Weather Decks

Approximately five acres of teak will be used for the weather docks of the MALOLO which will be one of the fastest and largest passenger steamships ever built in the United States. The MALOLO is now being constructed for the Matson Navigation Co., under the supervision of Gibbs Brothers, Inc., at Cramp's Shipyard, Philadelphia. The specifications call for 162,843 board feet of teak decking; 19,199 board feet of teak margins; 10,642 board feet of teak rail; and 2,515 board feet of teak foundations. All teak is to be sound and clear in accordance with the standards and requirements of the U. S. navy.

Open New Radio Station in Santo Domingo

Ship masters and ship owners may be interested to know that a new radio station has been opened at Barahona, Santo Domingo, by the Cuban Dominican Sugar Co. The equipment which was furnished and in stalled by the Independent Wireless Telegraph Co. is capable of transmitting and receiving on all commercial wave lengths between 600 and 2476 meters and will no doubt prove a valuable relay point between vessels in that vicinity and New York stations.

Messages destined for the United States can be expeditiously handled through this station and a considerable saving in time and cable tolls can be effected while vessels are in the vicinity of the Canal Zone or Southern Caribbean waters.

Get Wireless Contract for Export Ships

After the transfer of the government ships operated by the Export Steamsip Corp., to that company's ownership and jurisdiction, contracts were awarded the Independent Wireless Co. for the maintenance of the wireless equipment on all of the 18 ships bought, the names of 17 of which are: CITY OF EUREKA, WINONA, OSSA, SAUCON, SAUGUS, SINSINAWA, CORSON, HOG ISLAND, LUXPALILE, NOBLES, CITY OF ST. JOSEPH, CLONTARF, COUER D'ALENE, BLAIR, BLUE TRIANBLE, CARENCO and LIBERTY LAND.

Two Ferry Boats Ordered by Reading Railroad

The middle of September an order was placed by the Reading railroad for two ferry boats. The Bethlehem Shipbuilding Corp. was the successful bidder. These two boats which under present conditions of the shipbuilding industry constitute quite an appreciable order, will be constructed in the Harlan & Hollingsworth plant of the company at Wilmington, Del.

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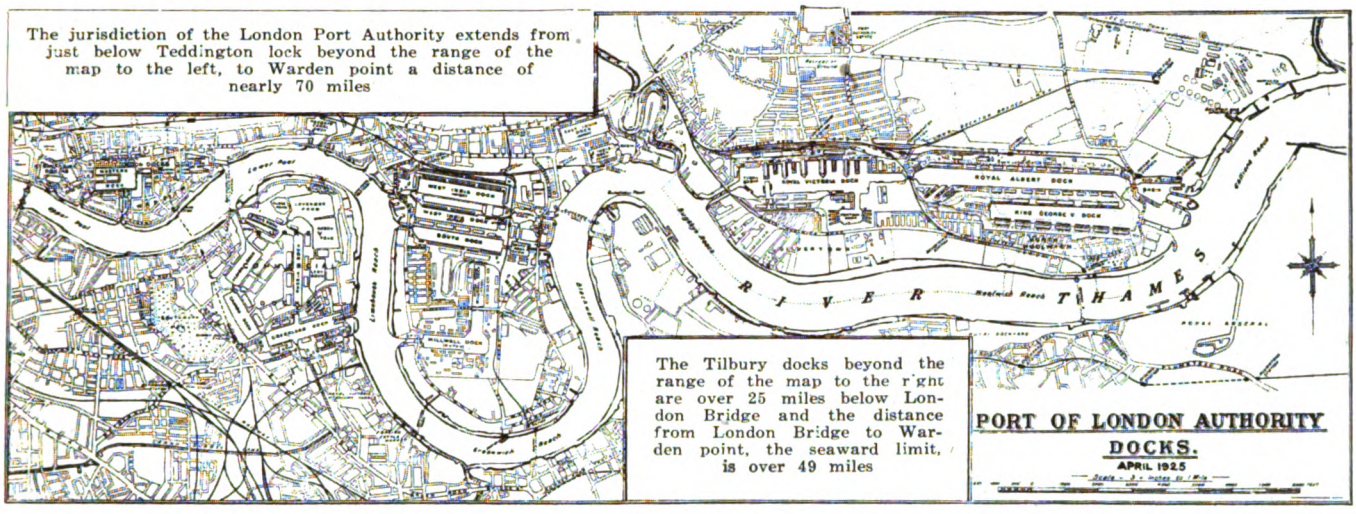
Dock Management Progress Section

How Successful Dock Operators Have Met Problems of Giving Best Service to Ships


The jurisdiction of the London Port Authority extends from just below Teddington lock beyond the range of the map to the left, to Warden point a distance of nearly 70 miles
The Tilbury docks beyond the range of the map to the right are over 25 miles below London Bridge and the distance from London Bridge to Warden point, the seaward limit, is over 49 miles
RIVER THAMES
PORT OF LONDON AUTHORITY
DOCKS.
APRIL 1925

River Thames from London Bridge to Barring Creek—From the left in order are, the London docks, the Lower Pool, the West and East India, the South and Millwall docks, the Royal Victoria, Albert and King George V Docks

Port of London is Wisely Managed

Natural Handicaps are Overcome by Skillful Planning and Energetic Execution

BY VINCENT DELPORT
European Manager Marine Review

WITH the laudable ambition to give London first place among the ports of the world, the Port of London Authority has started operations on a large improvement scheme which, it is estimated, will cost about £12,000,000 ($58,000,000). The Port of London Authority was constituted by act of Parliament in 1908. Its immediate function was to unify, reorganize and modernize the old docks, formerly managed by private companies, and to secure the development of the tidal portion of the River Thames, formerly under the jurisdiction of the Thames Conservancy. Its permanent function is to preserve and administer the port. The Authority consists of a board of 28 members. Eighteen are elected by the payers of due and ten are appointed by government departments and public authorities. Its capital at the present time is about £30,000,000 and is in the form of port stock bearing fixed rates of interest. There are no shareholders and no division of profits in the ordinary meaning of those terms. The members of the Authority give their services gratuitously.

The Port of London extends from a point just below Teddington lock on the Thames to an imaginary line drawn from Havengore creek in Essex to Warden Point in Kent, a distance of nearly 70 miles. The whole area of the river within these limits is under the jurisdiction of the Port of London Authority. Above London Bridge the traffic is confined to barges and vessels of light draft, but a few specially constructed steamers of 1200 tons proceed as far as Wandsworth. Large sea going steamers ascend as far as the Pool of London, the name given to that part of the river immediately below London Bridge within ten miles of which all the docks are situated, except Tilbury docks, which are 26 miles down the river.

Immediately below the Tower Bridge, which terminates the Pool of London, is St. Katharine dock, constructed in 1825-28. It covers an area of 23½ acres, and admits vessels of 20 feet draft. In the Authority's warehouses here are seen mother-of-pearl, foreign marine shells, tortoiseshell, indigo, perfumes, tea, marble and many other valuable articles.

The London docks, which were opened in 1805 and enlarged in 1858, have an area of 102 acres. The Authority has improved the facilities at these docks by the construction of a ferro-concrete jetty (782 feet long) with double story transit sheds, and a double decked ferro-concrete shed. A large variety of goods is stored in the warehouses, such as wool, ivory, spices, gums, quicksilver and india-rubber. There are also extensive brandy-vaults and wine-vaults containing port, sherry and madeira.

The only docks on the south side of the river are the Surrey commercial docks, built in 1807. They cover an area of 380 acres, of which 165 are water. In these docks immense quantities of timber, grain, and dairy produce are landed. Much of the timber is kept in extensive timber ponds, and the more perishable goods, such as meat, butter and cheese, are stored in large refrigerating warehouses.

At the West India docks the chief

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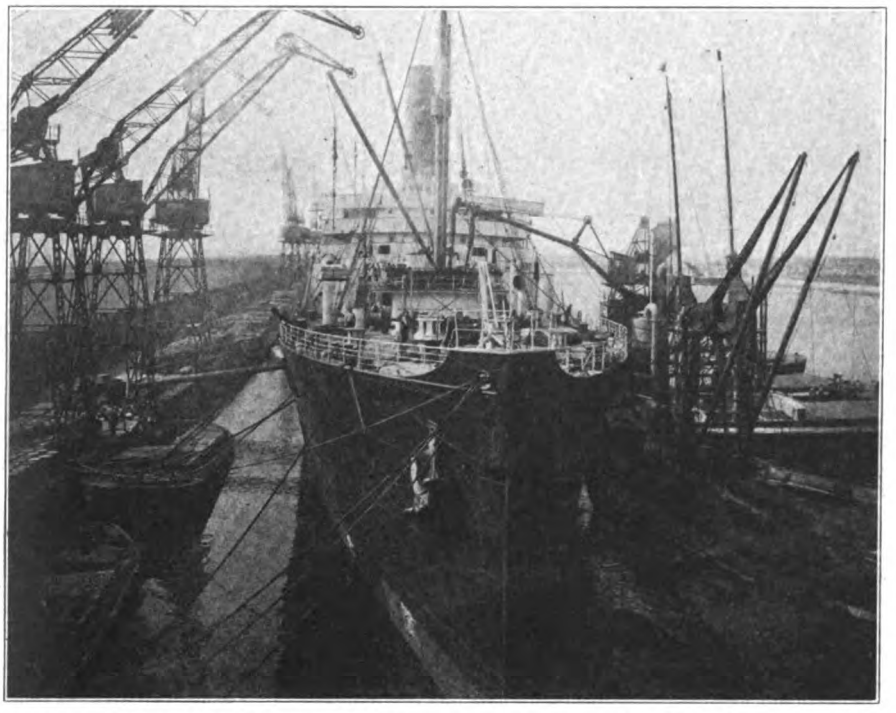
cargoes unloaded are rum, sugar, hops, grain and furniture woods. The rum vaults are lighted entirely by reflected light and contain a stock of about 40,000 puncheons of rum. These docks were opened in 1802 and cover 241 acres.

About two-fifths of the grain imported into London is discharged at Millwall docks, which were constructed in 1864, and have an area of 231½ acres.

The East India docks have an area of 68½ acres and were opened in 1806. The Authority has recently improved and developed them to a great extent, and they can now be used by steamers of 8000 tons net register.



TILBURY DOCK—R. M. S. CARONIA (GROSS TONNAGE 19,687) IN BERTH SHOWING SIMULTANEOUS DISCHARGE OF GENERAL CARGO BY QUAY CRANES AND OF GRAIN BY A FLOATING PNEUMATIC ELEVATOR

Later Dock Development

The Royal Victoria, Albert, and King George V docks were opened in 1855, 1880 and 1921 respectively. They have an area of 1102 acres, of which 245 acres are water, and, being connected, form the largest single sheet of dock water in the world. The main commodities unloaded at these docks are tobacco, grain, frozen meat, wool, green and dried fruit. The Authority's tobacco warehouses at the Victoria dock are the principal bonded warehouses for tobacco in London, and can accommodate over 30,000 tons. At these docks there are also huge granaries, two flour mills and cold storage accommodation for over 1,050,000 carcasses of mutton.

The Tilbury docks, which were opened in 1886, have a water area of 90 acres and are 38 feet to 42 feet in depth. The liners of the Orient company, the Peninsular and Oriental, the Clan, Bibby and other important lines have their homes here. It is the intention of the Authority to improve the facilities by the construction of a new dry dock, and a passenger landing stage in the river 2000 feet long. On the river near these docks is a deep-water jetty 1000 feet long. for the accommodation of vessels discharging part cargoes.

In addition to the numerous warehouses and transit sheds which it possesses at the docks, the Port of London Authority has two large and commodious warehouses in the city, the Commercial road warehouse and the Cutler street warehouse.

The Commercial road warehouse was specially designed for the accommodation of the traffic to and from Tilbury docks. Its total area is 358,000 square feet or about 8 acres. Railway lines run direct into the lower floors, where there is access for road conveyances alongside the platforms. The upper floors are used mainly for the storage of India and Ceylon teas.

The Authority's other uptown warehouse is in Cutler street, Houndsditch. It covers an area of 5 acres and holds over 20,000 tons of goods. Here are stored thousands of tons of tea, carpets and porcelain ware. A feature of this warehouse is the stock of Oriental curios, which includes idols from the four corners of the earth, ivory figures, bronzes, embroidered silk and satin screens, vases and bowls of beaten brass, Egyptian and Persian coffee pots and holders, Japanese pictures and ancient manuscripts from Persia and Mexico. To the Cutler street warehouse are also sent consignments of ostrich feathers, cigars, cigarettes, tobacco, drugs, silk, and cotton piece goods from China, Japan and Bengal. There is also a silk "conditioning" house, where representative skeins are dried for the purpose of arriving at the net weight as a basis of sale.

Improvements and Extensions

The improvement in progress and contemplated constitute a large scheme and comprise:

At the London docks a quay and a two-story shed 1260 feet long, on the north side of the Western dock, together with a jetty, 783 feet long and 192 feet wide, with two story warehouses thereon, equipped with electric cranes of a capacity up to 20 tons. The ships' passages between the Eastern and Western docks have been widened and deepened, and a pumping installation laid down to raise and maintain the water level so as to provide depth of 25 feet 6 inches in the Eastern dock, and of 24 feet 6 inches in the Western dock. A cold store with accommodation for 78,000 carcasses of mutton is to be built on a site immediately adjoining Smithfield market.

At the West India docks, a quay 2456 feet long, with three two story sheds on the north side of the Import dock; and a quay 1608 feet long, and two single story sheds on the north side of the Export dock.

At the East India docks, a quay 1400 feet long, with three single story sheds on the north side of the Import dock; and a quay 434 feet long, with a two story shed, on the East side of the Import dock. A lock, 80 feet wide, between the basin and the Import dock, with a depth of 31 feet. A pumping installation to raise and maintain the water level so as to provide a depth of 28 feet at the Import and Export docks.

At the Millwall docks, the lengthening of the dry dock to 555 feet and the provision of new de-watering pumps.

At the King George V dock, a new dock with 64 acres of water, 2 miles of quayage and a depth of 38 feet, on the south side of the Royal Albert dock, connected thereto by a passage 100 feet wide. An entrance lock 800 feet long and 100 feet wide, with a depth of 45 feet below Trinity high water capable of extension to a length of 910 feet by the use of a floating caisson; a large dry dock, sheds, roads, railways, and necessary appurtenances.

At the Royal Victoria and Albert docks, a quay, a six story warehouse and the extension of an existing warehouse at the Royal Victoria dock for the accommodation of tobacco. A cold store and a cold sorting shed on the north side of the Royal Albert dock, capable of storing 646,000 carcasses of mutton at one time, equipped with the most modern mechanical appliances for handling meat cargoes. The

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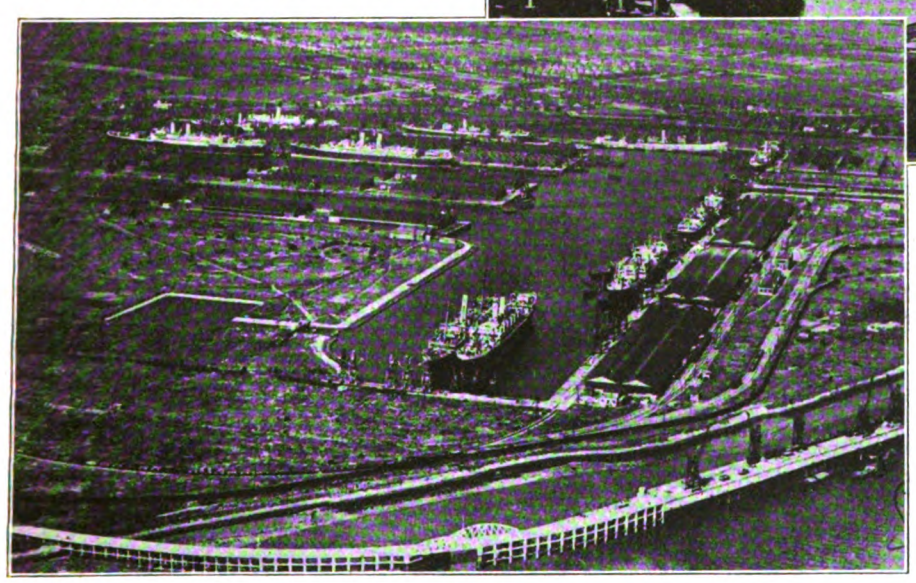
lengthening and widening of the Western dry dock to 575 feet by 80 feet and the installation of improved de-watering pumps. A pumping installation to increase the depth of water in the Royal Victoria dock to 28 feet, in the Royal Albert dock to 29 feet 6 inches, and in the Royal Albert dock basin to 34 feet 6 inches. Two double story and four single story sheds, with roads and railway facilities on the south side of the Royal Victoria dock. The equipment of the Royal Albert dock with 43 three-ton electric cranes of the most modern type.

At the Tilbury docks, an extension of the water area of the main dock by 17 acres, with a depth of 42 feet 6 inches below Trinity high water, with 1800 feet of quay, three sheds, modern electric cranes and railways. The construction of concrete dams and the provision of improved de-watering pumps at the dry docks.

At the Surrey Commercial docks, a dock with an area of 15 acres and depth of 27 feet below Trinity high water, providing five berths for vessels 400 feet in length, with suitable sheds, equipment and roads adjacent thereto. The dock will communicate with the Canada dock by means of a new passage 80 feet wide. The dock will be constructed so as to permit of deepening to 35 feet below Trinity high water when desired.

In general, there will be considered the equipment of the whole of the dry docks with cranes for lifting up to 25 tons from beyond the center of the keel blocks and the installation of air compressors for operating pneumatic tools; sheds and warehouse accommodation of an aggregate floor area of 37 acres in addition to the 79 acres carried out in connection with the larger works referred to above; and the provision of a large number of cranes, locomotives, tugs, launches, grain elevators and other modern appliances.



AN AERIAL VIEW OF TILBURY DOCKS—LOCATED A LITTLE OVER 25 MILES BELOW LONDON BRIDGE—THE ENTRANCE TO THE DOCKS FROM THE RIVER IS BY WAY OF A CHANNEL FROM THE TIDAL BASIN BEYOND THE RANGE OF THE ILLUSTRATION TO THE RIGHT

At Tilbury, will be built a two story jetty, 1000 feet long, in the river, with a depth alongside of 30 feet at low water ordinary spring tides and equipped with modern appliances for the discharge of vessels into railway truck, barge or covered storage provided on the jetty. The railways thereon are connected by an approach viaduct with the London, Midland and Scottish railway.

In addition to the above improvements the Authority are carrying out their program for the widening and deepening of the navigable channels in the river as follows: From London bridge to Tower bridge, 450 feet wide and 14 feet deep at low water. From Tower bridge to Thames tunnel, 500 feet wide and 14 feet deep. From Thames tunnel to the Greenland dock, 500 feet wide and 16 feet deep. From Greenland dock to the Royal Albert dock, 600 feet wide and 20 feet deep. From the Royal Albert dock to Coldharbor Point, 600 feet wide and 30 feet deep. From Goldharbor Point to the Nore, 1000 feet wide and 30 feet deep.

For this work an additional dredging plant has been purchased at a cost exceeding £400,000.

For India and Millwall docks there has been authorized the following work:

(a) A new entrance to the South West India dock 550 feet long by 80 feet wide by 35 feet deep at Trinity high water. This lock will be on the site of the present South dock entrance.

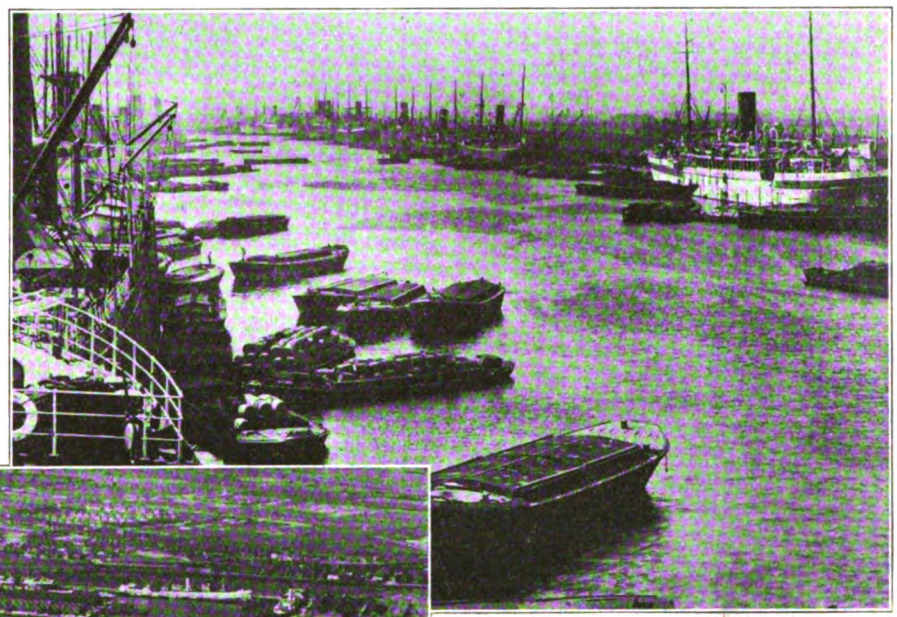
(b) A passage between the South West India dock and the West India Export dock.

(c) A passage between the Export dock and the Import dock.

(d) A passage way for vessels connecting the Millwall dock with the South West India dock.

(e) Additional sheds for hardwood storage to replace those displaced by the improvement scheme.

The three passages (b), (c) and (d) will enable vessels entering by the new South dock lock to reach any part of the India and Millwall dock system.



VIEW OF ROYAL ALBERT DOCK—THE ROYAL VICTORIA, ALBERT AND KING GEORGE V DOCKS ALL CONNECTED FORM THE LARGEST SINGLE SHEET OF DOCK WATER IN THE WORLD

A berth 620 feet long will be built on the north side of the tidal basin at the Royal Victoria dock for the discharge of chilled beef, dredged to give a depth of 28 feet, with all necessary equipment, handling appliances, roadways and railways. A shed 408 feet long by 95 feet wide, with covered platforms for loading road and railway vehicles, and a a shed 188 feet by 30 feet for the barge berths will be constructed.

A dry dock 750 feet by 110 feet wide, and capable of extension to 1000 feet, when required, with a depth on blocks of 37 feet 6 inches will be constructed at Tilbury.

There will also be built at Tilbury a passenger landing stage 1140 feet long with a depth of water alongside of 35 feet below low water ordinary spring tides. It will be a floating structure directly connected with Tilbury station. Every facility for the rapid and convenient landing and embarking of passengers and baggage to and from vessels of the largest dimensions will be provided.

Into London's docks come commodities from every land between the poles and the equator—sugar and rum from the West Indies, frozen meat

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ONE OF THE AVENUES OF WOOL AT LONDON DOCK. WOOL SET OUT FOR SHOW. THIS DOCK IS NEAR LONDON BRIDGE AT EXTREME LEFT OF MAP

from Australia and New Zealand, timber from Scandinavia and the Baltic, furs from Canada and Russia, carpets from Turkey, Persia and China, blocks of marble from Italy and Asia Minor, shells from the Southern Seas, teas and spices from China and the East Indies, ivory from Africa and India, rubber from Java and Singapore, wine from Spain and Bordeaux, odorous drugs from Ceylon and the Malaccas, and even the sunshine of the tropics, embalmed in fruit in crystal juices. Ships of every flag frequent the Thames, and the highways of London's docks are known to the nimble Lascar, the swarthy Greek, the flaxen-haired Swede, the red-tasselled *matelot*, the white-capped American and the businesslike Japanese—of every rank and rating—navy, mercantile and tramp.

The prices obtained in the London sales rooms for merchandise imported into London exercise a governing influence on their quotations in other markets.

In the year 1924, 45,394,735 net register tons of shipping arrived at and departed from the Port of London, while in 1923, the latest for which figures are available, the total value of London's imports and exports, excluding coastwise trade was £579,000,000.

London's Principal Imports in 1924

In Tons Except as Noted

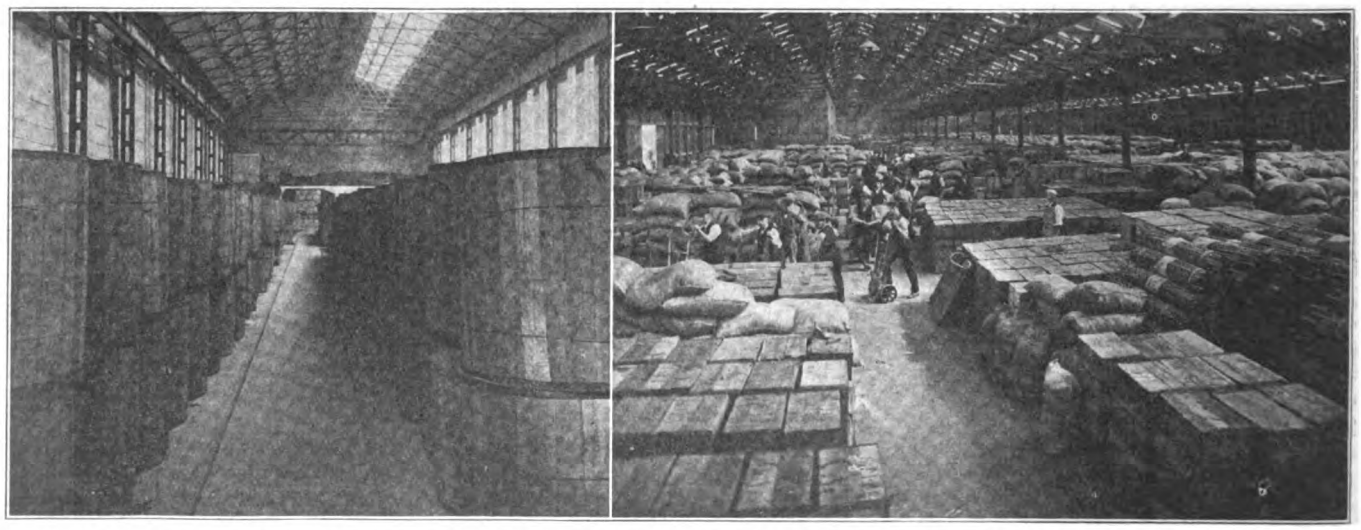
Grain and seed	2,790,340
Wood	1,682,526
Paper, millboards, pulp, etc	861,192
Sugar	759,760
Fruit, green and dried	637,040
Meat, frozen and chilled	632,190
Provisions	485,336
Iron, steel and other metals	377,626
Tallow, stearine, oils and wax	324,022
Tea	211,041
Wool	160,049
Wine and spirits in gallons	13,000,000

For the discharge and handling of these varied cargoes the Port of London Authority provides a series of docks equipped with the most modern mechanical contrivances. Wherever possible and expedient the Authority has eliminated man-handling of goods and installed mechanical conveyers, stationary and portable, together with numerous electric trucks.

The Port of London Authority possesses a considerable range of warehouses, in which over 1,000,000 tons of goods can be stored, and performs many intricate and expert operations on behalf of merchants and importers. In addition to handling over 2,225,000 tons of imported and normally 800,000 tons of exported goods every year, it has entrusted to its care in its warehouses a stock of over 500,000 tons of merchandise.

In these warehouses, goods are stored pending their being taken up for home delivery or for re-export. These warehousing facilities are also of great advantage to consignees who may not wish to receive into their own hands any or all of their consignments at the time they are unloaded. The bonded warehouses where dutiable goods are stored are of special value to importers, since the duties payable on certain goods constitute by far the greater portion of their value. As the goods often remain in warehouse for a very considerable time, the amount of money which would be tied up if duty had to be paid at the time of landing would be very large and importers would consequently need a much larger capital. Particularly is this true of imported spirits, which may require to lie in warehouse for a lengthy period to mature before being blended; and there is the further advantage that allowances are made for losses by evaporation.

The Authority acts simply as custodian of the produce stored in the warehouses and performs such operations and services as the owners of the goods may direct. It houses the produce discharged from the vessels; reports upon the weight, quality and condition to the merchants interested; sorts the produce to quality and marks; opens packages containing such goods as are sold by inspection



LEFT—A SECTION OF THE TOBACCO WAREHOUSES OF THE ROYAL VICTORIA DOCK. RIGHT—TRANSIT SHED OF THE ROYAL ALBERT DOCK SHOWING A LARGE QUANTITY AND A VARIETY OF COMMODITIES

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of the whole package, and furnishes samples representing the exact condition of the produce. These samples are sent to brokers' offices or for exhibition to the London sales rooms.

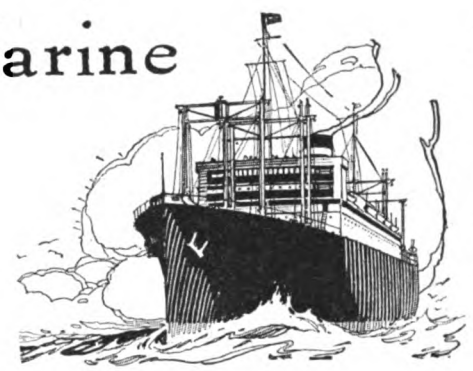
In addition to the delivery and warehousing of imported goods, the Port of London Authority also undertakes the collection, conveyance and shipment of goods for export, the tonnage passed over the docks quay during the year ended March 31, 1924, exclusive of goods loaded direct from barge being 615,349 tons.

Such is the power of the London market that there are few, if any, oversea lands which are not indebted to it in some way or other for their commercial development. Through the agency of the London wool sales the Australian wool trade was built up, and in recent years the power of the London market has been still further demonstrated by the remarkable growth of the trade in frozen and chilled meat, dairy produce, green fruit and other commodities.

London is also the key port and entrepot of Europe, the center upon which converge the transport systems not only of Great Britain but also of the Continent, and in supplying the markets of Europe, producers in every country of the world naturally turn toward London as the central and leading exponent.

American Marine Exposition *in* New York

Nov. 9-14



THERE is a strong belief today that the only way the marine industry can ever hope to secure the political and financial support of the American people, is for all branches of the American marine industry, ports, ship owners and operators, ship builders, equipment manufacturers, and organizations, to coordinate all their efforts to educate the general public on its true value to the nation. To bring this about is one of the chief aims of the marine exposition to be held in New York at the Two Hundred and Twelfth Anti-Aircraft Regiment armory at Sixty-second street and Columbus avenue the week of Nov. 9-14, 1925.

All the other important industries, such as the railways, electrical, automotive and mechanical, are far better organized than the marine industry. The automotive industry for instance is generally credited for bringing about about a national improvement of good roads, and securing an indirect subsidy from the United States for the building of roads for national defense, which has proven to be the greatest asset of that industry.

The only serious movement under way at the present time to co-ordinate the efforts of the various sections of the marine industry, which is now gaining momentum, is to have a joint meeting in New York during marine week, Nov. 9-14, 1925—the week of the American Marine exposition including Ports and Transportation.

A suggested plan evolved this year calls for a Great Lakes exhibit. It is proposed that the cities of the Great Lakes, through their chambers of commerce or other organizations that really have the progress of these cities at heart, should co-operate in arranging a co-ordinated exhibit to bring out the present and possible future developments of the ports, the shipping lines operating on the Great Lakes, the ship yards and their equipment, the marine equipment manufacturers and the industrial and residential features of this great section.

Several of the large Eastern ports including Baltimore and Newark have already reserved space for an exhibit as suggested above. The cost of an exhibit, such as the rental of space and the personnel, will be jointly financed by all those who participate in the exhibit.

Other interesting exhibits will feature the air and sea forces of the United States navy, the services of the department of commerce, the achievements of the war department's army engineers and inland and coastwise waterways service. Unusual exhibits are now being built by members of the American Marine association.

Exhibits, for space already contracted for, will attract the attendance of practically all those engaged in the various phases of the marine industry.

Unusual publicity features, and advertising is further assurance that the American Marine exposition is being staged exclusively for the benefit of the American marine industry. The rental for space merely covers the overhead expenses of staging the exposition. No salaries or commissions are being paid for the sale of space or anything else in connection with the exposition.

The American Marine association has been in touch with the various marine societies, and has secured the co-operation of 15 important organizations that will convene in New York during Marine Week.

Eastern Steamship Co. Expands Activities

The Richmond-New York Steamship Co. has called a special meeting of stockholders for Sept. 22 to act on an offer for the purchase of the company's property and business received from G. L. Stone, chairman of the Eastern Steamship Co., which has been approved by the directors. Reports place the offer for the total assets of the company at from $250,000 to $275,000.

The Eastern Steamship Co. is one of a group represented by Mr. Stone, all of which are coastwise lines operating along the Atlantic. The plan as outlined to the stockholders will probably net the holders of the 5,000 shares of outstanding common about $10 per share. They are offered the option of exchanging five shares of Richmond-New York stock for one share of Eastern Steamship, which has a present market value $50 per share.

Mr. Stone is also head of the Atlantic Gulf and West Indies Steamship Lines, which control the Ward Line, the Mallory Line and the Porto Rico Line.

Use Steamers as Hotels

The new steamers BOSTON and NEW YORK, which were placed in service last year by the Eastern Steamship Co. in the run between Boston and New York, may be taken to Florida for the winter to be used as floating hotels. Officials of the line are said to be giving the matter consideration.

If the steamers go south they will be stationed at Miami where they would aid materially in relieving the housing shortage. These boats would thus be made remunerative at a period of the year when they are a loss commercially.

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Late Flashes On Marine Disasters

Brief Summaries of Recent Maritime Casualties— A Record of Collisions, Wrecks, Fires and Losses

Name	Date	Nature	Place	Damage Resulting
A. S. Upson	Aug. 25	Aground	St. Clair River	Floated
Alberta	Aug. 15	Fire	Brooklyn	Not stated
Admiral Schley	Aug. 19	Collision	Columbia River Bar	Not stated
Anderson	Sept. 3	Disabled	Newport News	Engine
Alexandre	Aug. 1	Collision	River Scheldt	Sank
Attiki	Aug. 3	Sank	Piraeus	Not stated
Antipho	Aug. 2	Sank	Alexandra Road	Not stated
Arcturus	Aug. 5	Fire	Not stated	Considerable
Agwimoon	Aug. 7	Aground	Leghorn	Grounded
Ary Scheffer	Aug. 6	Collision	Antwerp Roads	Starboard side
Auguste	Aug. 6	Collision	Lower Elbe	Stern
Aqua	Aug. 10	Fire	Hayward's Wharf	Slight
Annik	Aug. 10	Fire	Not stated	Slight
Aquarius	Aug. 14	Collision	North Foreland	Slight
Atlantic	Aug. 14	Struck docks	Svenborg	Bows
Anaconda	Sept. 6	Struck quay wall	Schiedam	Bows, steering gear
Adamastor	Aug. 27	Aground	Leticia	Not stated
Anfora	Aug. 27	Disabled	Gibraltar	Engines
Bertha	Aug. 6	Collision	Lower Elbe	Not stated
Bloom	Aug. 13	Disabled	Grimsby	Propeller
Beautiful Star	Aug. 13	Fire	Marshall Meadows	Total loss
Bussum	Sept. 8	Ashore	Roervik	Floated
Bonus	Aug. 24	Collision	Not stated	Slight
C. W. Kraft	Aug. 19	Ashore	Niagara Reef	Not stated
Colonel	Aug. 26	Aground	Bar Point	Floated
Cissy	Aug. 19	Touched bot.	St. Lawrence River	Leaking
Cameronia	Aug. 24	Struck quay wall	Glasgow	Bows
Cepheus	Aug. 26	Collision	Buffalo	Plates
City of Fort Worth	Aug. 24	Disabled	Marquesas	Lost prop.
C. J. Curtain	Aug. 27	Fire	New York	Slight
Colonial	Sept. 1	Fire	Lake Erie	Total loss
Conisbro Castle	Aug. 4	Disabled	Grimsby	Engine
Chosa Maru	Aug. 5	Collision	Not stated	Rudder
Cissy	Aug. 12	Grounded	Cape Chat	Floated—tanks leaky
Carlo Pisacane	Aug. 13	Grounded	Parana River	Not stated
Carlton S. Smith	Aug. 10	Aground	Off Cape Cod	Floated
Castelar	Aug. 24	Collision	Seville	Not stated
Cabo Villano	Sept. 10	Fire	Alicante	Slight
Dalhousie City	Aug. 22	Struck pier	Port Dalhousie	Steering gear & bow
Dania	Aug. 24	Collision	Nantucket Shoals	Plates
Desirad	Aug. 1	Grounded	Antwerp Roads	Floated
Dalworth	Sept. 1	Grounded	Off Oakland	Floated
Danekonge	Aug. 24	Disabled	Downs	Engine
E. J. Crosby	Aug. 17	Struck breakwater	Milwaukee	Damaged
Edna E. Brown	Aug. 17	Collision	Not stated	Starboard quarter
Everett	Aug. 21	Ashore	Vancouver Island	Floated
Essex County	Aug. 20	Ashore	Anticosti Island	Floated
Esther Adelaide	Aug. 24	Collision	Nantucket Shoals	Damaged
Ettore	Sept. 4	Disabled	St. Michaels	Machinery-propeller
El Abeto	Sept. 2	Grounded	Baltimore	Propeller-floated
Eastern Dawn	Aug. 11	Disabled	Antwerp	Engine
East Goodwin	Aug. 14	Collision	North Foreland	Unknown
Eolo	Aug. 14	Aground	Near Whitby	Floated
Elfi	Aug. 13	Disabled	Swansea	Engine
Eldridge	Sept. 7	Stranded	Lewis Ledge	Floated
Eugenie F. Price	Sept. 9	Disabled	Lewis, Del.	Propeller
Fotinia	Aug. 20	Struck quay wall	Algiers	Rudder stock & plate
Fontana	Aug. 30	Aground	Amherstburg	Floated
Finland	Aug. 6	Disabled	New York	Propeller
Golden Rod	Aug. 17	Fire	Jamaica Bay	Not stated
Garfield	Aug. 17	Ashore	Savanilla	Floated
G. F. B.	Aug. 6	Grounded	Callot Shad	Floated
Glenardle	Aug. 12	Grounded	Cape Henry	Floated
Grecian	Aug. 26	Disabled	Boston Light	Steering gear
Girl Effie	Aug. 28	Aground	Bembridge Ledge	Not stated
Gen. Garretson	Sept. 13	Aground	Near Bar Point lightship	Floated
Harvester	Aug. 21	Collision	Point Judith	Not stated
Halsey	Aug.	Aground	Cayman Brac	Badly
Horace X. Baxter	Aug. 26	Ashore	Seattle	Not stated
Hortensius	Aug. 27	Fire	Buenos Ayres	Cargo
Hahira	Aug. 3	Collision	Not stated	Considerable
Imbracaria	Aug. 20	Went on rocks	Near Victoria, B. C.	Not stated
Invella	Aug. 6	Fire	Buenos Ayres	Not stated
Indian	Sept. 5	Collision	Off Delaware Capes	Plates
John A. Donaldson	Aug. 20	Aground	Collingwood	Leaking—floated
J. B. John	Aug. 27	Struck rock	Collingwood	Aground—floated
J. M. Schoonmaker	Aug. 31	Collision	Soo	Slight

Name	Date	Nature	Place	Damage Resulting
Jadden	Aug. 25	Fire	Colonnas Shipyard	Nos. 3 & 4 holds
J. A. Campbell	Sept. 4	Ashore	False Presque Isle	Leaking—floated
Kearney	Aug. 30	Struck rock	Seal Island	Plates
Kis	Aug. 7	Ashore	Kragero	Floated
Katori Maru	Aug. 26	Stranded	Atsubetsu Coast	Not stated
La Campagne	Aug. 31	Disabled	St. Johns	Boiler
Lewis Brothers	Sept. 2	Fire	Off Horn Island	Total loss
Lorenzo	Aug. 7	Disabled	Brisbane	Propeller
Lucia P. Dow	Sept. 6	Collision	Off Nantucket	Bows
Lesto	Aug. 28	Collision	Hartlepool	Undam.
Mataafa	Aug. 17	Struck dock	South Chicago	Rudder
Maggie	Aug. 27	Fire	New York	Slight
Monte Nevoso	Aug. 4	Collision	Hamburg	Slight
Mogul	Aug. 10	Stranded	Not stated	Floated—leaking
Mulhouse	Aug. 10	Collision	Not stated	Damaged
Meduana	Aug. 10	Collision	Not stated	Damaged
Melville Dollar	Aug. 9	Collision	Cape Blanco	Port bow—plates
Mauna Ala	Aug. 9	Collision	Cape Blanco	Not stated
Manaar	Aug. 12	Struck dock	Swansea	Bow
Malvern	Sept. 7	Sank	Montauk Point	Not stated
Matagorda	Sept. 5	Collision	Delaware Capes	Slight
Mackinac	Aug. 18	Explosion	Newport	Badly
Malvern	Sept. 7	Aground	Montauk Point	Not stated
Margarethe	Aug. 27	Stranded	Gluckstad	Sank-raised
Munrio	Sept. 10	Fire	Not stated	Slightly
Nina	Aug. 7	Sank	Mersey	Not stated
Nuolja	Aug. 10	Fire	Gotaverken Dry Dock	Slight
Notoro Maru	Aug. 26	Fire	Otaru	Not stated
Nantaise	Aug. 25	On rocks	Near La Jument	Sank—total loss
O. L. Hallenbeck	Sept. 11	Aground	Dry Romer	Floated
P. W. Sherman	Aug. 24	Disabled	Hay Lake	Rudder
President Adams	Aug. 19	Fire	Brooklyn	Not stated
Panama City	Aug. 25	Heavy weather	Not stated	Leaking
Point Judith	Sept. 3	Aground	Off Seattle	Floated
Port Arthur	Aug. 3	Collision	Not stated	Considerable
Philadelphian	Aug. 7	Grounded	Savannah	Not stated
Pontet Canet	Aug. 5	Grounded	Austruweel Roads	Floated
Poeldijk	Aug. 27	Fire	Santos	Not stated
Queen City	Aug. 10	Fire	Lake Superior	Not stated
Rosalind	Aug. 21	Collision	Point Judith	Bow
Redness Point	Aug. 12	Disabled	Dover	Machinery
Roana	Aug. 22	Disabled	St. Michaels	Boiler
Radius	Aug. 26	Collision	Vancouver Har.	Sank
St. Prosper	Aug. 18	Collision	Bordeaux	Seriously
Scranton	Aug. 26	Struck dock	Milwaukee	Damaged
Southland	Aug. 22	Fire	Lake Pontchartrain	Sank
San Patricio	Aug. 10	Struck rock	Not stated	Leaking slightly
Stella	Aug. 13	Ashore	Llanddwyn	Motor
Santa Luisa	Aug. 13	Grounded	Gatun	Floated
Secundus	Aug. 13	Disabled	Monte Video	Machinery
Seaborn	Aug. 14	Struck dock wall	Leith	Propeller
St. Marc	Aug. 12	Disabled	Off Ushant Coast	Not stated
S. B. Way	Sept. 9	Ashore	Fox Point	Plates
Sisto	Sept. 9	Struck rock	Herring Neck	Slight
Trontalite	Aug. 17	Touched bot.	St. Lawrence River	Not stated
Tigris	Aug. 4	Collision	Antwerp Roads	Seriously
Thermidor	Aug. 6	Disabled	Las Palmas	Boilers
Trevaylor	Aug. 7	Ashore	Blenheim Shoal	Not stated
Taara	Aug. 12	Ashore	Middelgrunden	Floated
Taihoku Maru	Aug. 5	Stranded	North end Benten Cape	Considerable
Treloske	Aug. 27	Fire	Buenos Ayres	Not stated
United States	Aug. 17	Struck breakwater	Milwaukee	Damaged
Victolite	Aug. 15	Ashore	Vercelles	Not stated
Victoria S	Aug. 23	Ashore	Ocracoke	Total loss
Volendam	Aug. 12	Fire	Rotterdam	Cargo slightly
Vermeil	Aug. 12	Sank	Dorman Long's wharf	Not stated
Vega	Sept. 7	Aground	St. Clair Flats	Floated
West Harcuvar	Aug. 17	Fire	Chesapeake Bay	Not stated
West Jessup	Aug. 22	Collision	Columbia River	Bow plates
W. H. Daniels	Aug. 26	Collision	Buffalo	Not stated
West Hardaway	Aug. 27	Ashore	River Scheldt	Floated
Waziristan	Aug. 27	Disabled	Conception, Chile	Main steam pipe
Yang Tse	Aug. 1	Collision	River Scheldt	Damaged
Yeifuku Maru	Sept. 6	Collision	Santos	Damaged
Zebu	Aug. 4	Collision	Antwerp Roads	Damaged

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Marine Business Statistics Condensed

Record of Traffic at Principal American Ports for Past Year

New York

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1925	469	1,889,239	493	1,933,228
July	457	1,813,338	547	2,130,581
June	521	2,177,995	507	2,103,914
May	435	1,820,544	538	2,215,561
April	434	1,796,849	528	2,093,444
March	472	1,899,036	517	2,032,263
February	398	1,680,392	449	1,867,624
January	387	1,556,853	457	1,869,323
December	423	1,673,567	470	1,822,485
November, 1924	392	1,709,329	456	1,921,088

Philadelphia

(Including Chester, Wilmington and the whole Philadelphia port district)
(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1925	84	197,743	65	146,144
July	96	241,244	57	131,400
June	107	260,756	67	165,940
May	87	209,866	63	155,359
April	102	243,546	67	182,335
March	96	238,863	58	163,257
February	93	238,802	55	154,033
January	77	224,574	57	180,331
December	71	179,994	61	188,667
November, 1924	85	220,852	59	174,470

Boston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1925	136	349,514	104	246,275
July	140	336,982	115	283,558
June	161	368,009	111	213,985
May	118	296,551	93	205,291
April	99	224,275	82	179,010
March	94	295,292	54	159,928
February	85	278,024	46	121,141
January	78	205,327	34	80,480
December	100	278,347	52	125,332
November, 1924	97	310,423	55	149,777

Portland, Me.

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
July, 1925	23	48,916	23	54,903
June	26	37,668	23	38,892
May	23	42,242	27	47,648
April	24	53,326	30	86,338
March	29	96,263	27	88,408
February	21	72,642	24	83,393
January	23	65,910	23	65,218
December	30	86,088	29	78,076
November	15	26,281	12	19,616
October, 1924	11	12,506	15	24,551

Providence

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1925	8	14,019	5	17,041
July	12	34,835	9	27,767
June	8	34,034	7	28,575
May	15	40,589	9	27,016
April	8	26,506	9	34,277
March	11	43,757	7	28,136
February	12	37,995	13	41,669
January	12	38,395	11	39,717
December	9	36,259	11	40,624
November, 1924	11	45,232	8	37,967

Portland, Oreg.

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1925	16	62,202	23	81,712
July	15	56,181	23	79,132
June	19	64,684	26	85,839
May	11	47,728	20	77,847
April	17	68,981	19	80,425
March	15	56,297	26	90,025
February	13	51,236	21	81,438
January	19	71,880	23	86,518
December	17	64,756	29	115,186
November, 1924	27	105,529	36	137,696

Baltimore

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1925	109	319,469	104	319,035
July	115	346,191	123	350,375
June	118	343,571	121	353,738
May	118	341,793	129	379,956
April	125	363,563	133	394,223
March	115	344,937	112	322,580
February	103	323,817	79	250,369
January	90	282,299	79	250,369
December	105	326,907	99	291,043
November, 1924	105	325,934	97	305,601

Norfolk and Newport News

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1925	70	183,064	122	348,775
July	61	163,764	131	347,756
June	81	221,318	152	433,953
May	63	159,186	140	376,657
April	82	84,936	112	308,744
March	26	73,427	100	257,061
February	14	40,669	66	186,031
January	39	95,259	88	262,371
December	41	108,930	93	274,576
November, 1924	81	89,647	70	205,671

Savannah

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1925	34	77,027	39	87,455
July	38	97,332	34	91,981
June	26	60,788	27	60,924
May	27	71,946	22	65,595
April	39	106,938	36	59,574
March	..	.....	...	.....
February	40	101,403	37	91,135
January	33	90,730	33	91,062
December	40	109,496	40	113,538
November, 1924	36	109,623	39	115,168

Key West

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1925	72	90,106	70	87,924
July	77	94,002	76	91,264
June	87	95,533	85	95,397
May	104	119,502	103	119,729
April	85	103,116	84	102,860
March	88	105,841	87	115,285
February	77	94,214	77	96,890
January	75	100,350	71	96,815
December	77	90,316	72	83,706
November, 1924	90	101,387	84	102,408

Mobile

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1925	83	172,872	75	152,613
July	89	180,488	80	160,739
June	86	161,215	79	156,160
May	95	193,841	89	172,419
April	92	190,808	91	180,993
March	97	215,386	91	197,950
February	93	192,722	82	184,575
January	84	192,722	82	184,575
December, 1924	84	165,352	80	165,325

Seattle

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1925	31	135,105	35	144,874
July	32	137,319	28	130,875
June	34	143,655	41	174,668
May	28	132,043	39	138,570
April	41	156,761	42	173,116
March	39	168,567	39	157,419
February	31	124,870	30	129,648
January	39	169,458	36	145,663
December	36	164,991	45	181,849
November, 1924	40	203,891	45	194,766

New Orleans

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
July, 1925	265	673,711	262	648,474
June	268	679,277	249	609,807
May	256	666,503	276	724,621
April	266	692,569	283	727,156
March	294	774,343	280	738,445
February	178	435,185	170	433,675
January	253	731,964	264	738,164
December	277	776,064	257	735,100
November	247	713,667	250	735,984
October, 1924	267	757,738	279	768,630

Houston

(Cargo tonnage)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
December, 1924	99	39,568	102	154,455
November	101	36,016	95	233,436
October	..	34,945	...	192,986
September	94	50,710	90	171,229
August	82	66,665	84	114,966
July	59	77,062	57	288,417
June	65	74,794	72	336,312
May	72	64,937	71	362,350
April	78	76,466	73	337,757
March, 1924	88	113,064	87	411,715

Galveston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1925	28	80,524	41	133,058
July	36	100,359	52	141,316
June	47	120,423	57	177,647
May	46	114,702	53	151,098
April	47	107,223	60	171,863
March	55	147,303	75	228,187
February	56	140,065	90	277,751
January	67	188,781	110	337,882
December	63	190,311	107	341,705
November, 1924	100	342,472	126	408,277

Los Angeles

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1925	161	344,646	160	295,220
July	133	326,692	119	285,624
June	162	382,186	102	278,294
May	168	363,843	138	298,066
April	153	316,134	137	262,681
March	131	359,572	113	281,149
February	162	284,988	127	237,474
January	127	312,248	115	259,345
December	153	343,151	118	276,302
November, 1924	195	810,425	121	223,778

San Francisco

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1925	154	579,197	154	549,844
July	138	517,798	136	511,844
June	135	514,900	96	464,024
May	163	567,001	145	554,483
April	134	472,879	157	517,654
March	129	542,912	139	669,367
February	117	443,749	124	454,699
January	119	446,477	126	454,303
December	59	231,805	83	314,541
November, 1924	73	251,022	82	318,615

Port Arthur

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1925	22	66,176	23	68,827
July	27	59,956	34	100,395
June	26	67,251	30	83,972
May	28	105,707	42	122,871
April	33	100,595	43	116,485
March	38	95,977	45	110,248
February	32	95,537	19	44,376
January	34	100,449	33	85,261
December	34	101,609	41	122,869
November, 1924	32	107,737	32	90,726

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What the British Are Doing

Short Surveys of Important Activities in Maritime Centers of Island Empire

AMONG the dismal shipping reports a bright exception is that of the British Steamship Trust, Ltd., which again pays a dividend of 11 per cent for the year ended June 30, having obtained a net profit of £155.-000. This has been secured in spite of the depression in shipping freights, but the frank explanation is given that the Trust maintains its profits largely by its policy of investing in various securities outside of shipping.

* * *

THE council of the mercantile marine service association, Liverpool, in its report for the past three months to members and supporters, states that the gloom of the shipping outlook is causing considerable anxiety to the council, as the decrease in the general trade of the country is having a serious effect on the prosperity of shipping. It is considered that the heavy burden of taxation is responsible for the present unprecedented trade depression, and as long as it continues, recovery is impossible.

* * *

ONE of the most interesting events of the month was the launching from Harland & Wolff's yard at Belfast of the world's largest motor liner, the Royal Mail Steam Packet Co.'s ASTURIAS 22,000 tons. The vessel is fitted with the two largest marine motor engines in the world. These engines are able to develop 20,000 horse power delivered on two shafts. The adoption of internal combustion engines has not necessitated any departure from the normal twin screw arrangements.

LORD KLYSANT presiding at the annual meeting of the Royal Mail Steam Packet Co., said the two twin screw mail and passenger motor ships now in course of construction represent an enormous advance on any existing motor ship and will be the largest motor vessels in the world, each being about 22,000 tons gross register and each having only two propelling motor engines of about 10,000 horsepower each. The first of these motor ships, to be called ASTURIAS, is to be launched at Belfast in July, and it is hoped will take her place on the South American route early next year. Her sister ship will follow about six months later. These vessels will be luxuriously equipped, and should contribute still further to the popularity of our South American mail service.

What's Doing Around The Lakes

CHICAGO'S city council has finally given way to the pressure of the war department and voted to inaugurate a program that will result in the city-wide metering of water within five years.

When Secretary of War Weeks last spring granted Chicago permission to continue drawing over 8000 cubic feet per second from Lake Michigan for flushing its drainage canal, he stipulated that within six months a start on metering of city water be made. The last day of grace was Sept. 3.

In July the Chicago council recessed until late October without taking action. When Maj. Rufus W. Putnam insisted that no extension would be granted and got the department at Washington to back him up, the council was assembled in extra session and the necessary legislation passed.

It is understood that most councilmen saw the logic of stopping the limitless use of city water and were faced with the expenditure of some millions for the construction of a new tunnel intake and pumping station. But the politics of the situation required that they take a firm stand against doling out water for the

"I SHOULD WORRY"
Donahey—Cleveland Plain Dealer

"peepul." When the war department put the screws on them it saved their face and they felt better.

THE setup of government in the Chicago district also has been conducive to delay. The sanitary district of Chicago blankets some hundreds of square miles outside of Chicago proper and is governed by a board completely divorced from the city administration. The sanitary district was threatened with a reduction of some 600 cubic feet per second—which approximates the water waste through non-metering—because the Chicago city council, a wholly foreign body, was dilatory.

* * *

MAJ. G. V. B. WILKES, federal engineer at Milwaukee, has absolved Chicago, of all the blame for the lakes below Superior being 18 inches under normal at this time. He holds the Chicago drainage canal responsible for 6 inches of this loss, but attributes the other 12 inches to the dry summer, deepening of the St. Clair channel and a variety of causes. Lake Superior, which is not affected by the condition at Chicago, also is below normal. Controlling works in the St. Clair and Detroit rivers are urged

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by Major Wilkes. For this purpose the Chicago sanitary commission has posted a $1,000,000 bond to guarantee its share of the cost.

* * *

THE excursion season on Lake Michigan has come to an end. The Goodrich Transit Co., Chicago, has taken its whaleback steamer, CHRISTOPHER COLUMBUS, of the Chicago-Milwaukee run and is putting it in winter quarters at Manitowac. The CITY OF BENTON HARBOR and the CITY OF ST. JOSEPH have been tied up at Benton Harbor, ending the excursion season between Chicago and Benton Harbor, St. Joseph and Michigan City. Weather conditions made the season only a fair one.

The Goodrich company now has the ALABAMA and the CITY OF GRAND RAPIDS running between Chicago and Muskegon, the CITY OF HOLLAND and the CAROLINA on the regular run between Chicago and Holland and Benton Harbor eastbound, the ILLINOIS and WISCONSIN on the Chicago-Milwaukee run and the CITY OF SAUGATUCK on the Chicago-Benton Harbor run. These services are all daily. The INDIANA of the Goodrich fleet is undergoing repairs at Manitowoc.

* * *

THE Chicago Duluth & Georgian Bay Steamship Co. has put its steamers NORTH AMERICAN and SOUTH AMERICAN into winter quarters at Holland. The past season was one of the best this company has experienced.

* * *

IT IS claimed that the cargo of 475 automobiles carried from Toledo to Chicago on the CITY OF BANGOR, of the Nicholson Transit Co., arriving at Chicago, Aug. 28, set a new high mark for water-borne automobile traffic on the Great Lakes.

* * *

THE ARIZONA, under charter from Goodrich Transit Co. to the Peninsula & Northern Navigation Co., Milwaukee, went off the Milwaukee-Muskegon run Sept. 15.

Ocean Freight Rates

Per 100 Pounds Unless Otherwise Stated

Quotations Corrected to Sept. 19, 1925 on Future Loadings

NOTE: FREIGHT RATES STEADY WITH BUSINESS QUIET

New York to	Grain	Provisions	Cotton (H. D.)	Flour	General cargo cu. ft.	General cargo 100 lbs.	††Finished steel	REMARKS Freight Offered
Liverpool	1s 9d	$0.50	$0.30 to 0.45	0.18	$0.40	$0.75	$7.00T	Fair
London	1s 9d‡	0.50	....	0.18	0.40	0.75	7.00T	Fair
Oslo	$0.14	0 45	0.50	0.27	0.42½	0.85	7.00T	Fair
Copenhagen	0.13	0.45	0.50	0.26	0 42½	0.85	7.00T	Fair
Hamburg	0.14	0.35	0.40	0 20	0.37½	0.75	8.00T	Good
Bremen	0.14	0.35	0.40	0.20	0.37½	0.75	8.00T	Good
Rotterdam and Amsterdam	0.15	0.32½	0.45	0.20	0.35	0.70	7.50T	Fair
Antwerp	0.14	0.32½	0.35	0.18	0.35	0.70	7.50T	Very good
Havre	0.14	0.50	0.35	0.27½	0.40	0.75	8.00T	Very slow
Bordeaux	0.14	0.50	0.35	0 27½	0.40	0.75	8.00T	Very slow
Barcelona	0.20	12.00T	0.30	10 00	—12.00T—		7.00T	Fair
Lisbon	....	0.65	0.40	7.00T	—20.00T—		7.00T	Slow
Marseilles	0 15	0 55	0.30	6.00	—20.00T—		5.00T	Slow
Genoa	0 14	12 50	0.40	7 00	—20 00T—		10 00T	Fair
Naples	0.14	12.50	0.40	7.00	—20 00T—		10.00T	Fair
Constantinople	0.27	17.00T	0 75	0.32½	—20.00T—		9.00T	Good
Alexandria	....	17.00T	0.75	0.32½	—20.00T—		9.00T	Good
Algiers	....	0.75	0.50	0.40	—20.00T—		7.00T	Very Slow
Dakar	....	15.00	....	14.00T	—21.00T—		10.50T	Good
Capetown	10.00T	18.00	....	12.00T	—18.00T—		18.00T	Very good
Buenos Aires	....	18.00 to 20.00T	....	....	18.00 to 20.00T†		8.00 to 8.80T	Fair
**Rio de Janeiro	....	21.50 to 23.50T	....	11.25 to 12.50T	19.00 to 21.00T†		7.00 to 7.70T†	Fair
Pernambuco	....	22.00T	....	9.50T	—22.00T—†		9.70T†	Fair
Havana	0.22½ to 0.27½*	0.42½*	....	0.22½*	0.54*	1.08*	10.20*	Fair
Vera Cruz	0.25	0.40	0.45	0.25	0.52½	1.05	0.30 to 0.35	Fair
Valparaiso	....	1.07	....	0.75	0.45	0.80	10.00T	Fair
San Francisco	....	0.40 to 0.70	....	0.50 to 1.10	....	2.50	0.55 to 1.00	Very good
Sydney	....	18.00T	2.50	18.00T	18.00-24.00T		9.00-12.00T	Fair
Calcutta	....	16.00T	0.60	12.00T	—16.00T—		10.00T	Fair

T—Ton. ‡Per quarter of 480 lbs. †Landed. ††Heavy products limited in length. *Extra charge for whartage.
**Plus $1.00 surcharge on all rates to Rio de Janeiro on account of congestion.

From North Pacific Ports to	Lumber Per m.f.t.
San Francisco	$5.00
South California	5.00 to
Hawaiian Islands	10.00 to 12.00
New Zealand	17.00 to 20.00
Sydney	12.50 to 13.50
Melbourne-Adelaide	13.00 to 14.00
Oriental Ports	8.50 to 9.50
Oriental Ports (logs)	11.50 to 13.00
Peru-Chile	11.00 to 13.00
South Africa	17.00 to 18.00
Cuba	14.00 to 16.00
United Kingdom	75s to 90s
United Kingdom (ties)	70s to 80s
Baltimore-Boston range	$15.00 to 16.00
Baltimore-Boston range (ties)	Not quoted
Buenos Aires	14.00
Flour and Wheat	
U. K. and Continent (gross ton)	33s to 37s 6d
Oriental Ports (net tons)	$4.00 to 4.50

Principal Rates To and From United Kingdom

	s	d		s	d
Grain, River Plate to United Kingdom	18	0	Pig iron, United Kingdom to New York or Philadelphia	12	6
Coal, South Wales to Near East	9	0	Iron ore, Bilbao to Cardiff	5	9
Coal, United Kingdom to Buenos Aires	18	0	Iron ore, Huelva to Phila. or Balto	9	9
Manganese Ore, Poti to Philadelphia	$3.75				

Bunker Prices

At New York

	Coal alongside per ton	Fuel oil alongside per barrel	Diesel oil alongside per gallon
Jan. 20, 1925	5.25@6.05	1.86½	5.50c
Feb. 18	5.25@6.05	1.86½	5.50c
Mar. 17	5 00@6 25	1.86½	6.00@6.50c
April 20	5 00@6.00	1.86½	5.50
May 18	5.00@6.00	1.75	5.48
June 4	5.00@6.00	1.86½	5.50
July 20	4.90@6.00	1.75	5.50
Aug. 17	5.00@6.00	1.65@1.71½	5.50
Sept. 19, 1925	5.50@6.00	1.65@1.71½	5.00

At Philadelphia

	Coal trim. in bunk per ton	Fuel oil alongside per barrel	Diesel oil alongside per gallon
Jan. 20, 1925	5.25@5.80	2.06	5.41@5.65
Feb. 18	5.25@5.80	2.10@2.25	5.9@6.9
Mar. 17	5.05@5 82	2.06½@2 31	6.10@6.15
April 20	5 00@6.00	1.95@2.06½	5.65½
May 18	5.00@5.80	1.85@1.91½	5.41@5.64
June 4	4.90@5.50	1.86½	5.50
July 20	4.90@5.50	1.69@1.81½	5.15@5.43
Aug 17	5.00@5.80	1.56@1.71½	5.15@5.29
Sept. 19, 1925	5.25@5.50	1.55@1.61½	5.00

Other Ports

Boston, coal, per ton...$6.49
Boston, oil, f. a. s., per barrel...$1.80
Hampton Roads, coal, per ton, f.o.b., piers 5.35 to 5.50 f.o.b.
Sept. 11—Cardiff, coal, per ton...13s 0d
London, coal, per ton 25s 6d
Antwerp, coal, per ton 23s 6d
Antwerp, Fuel oil, per ton 77s 6d
Antwerp, Diesel oil, per ton...97s 6d

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New Trade Publications

DIAMOND BLOWERS.—The Diamond Power Specialty Corp. has reprinted a very attractive bulletin which features Diamond valve-in-head blowers, and contains information and data which should be of interest and value to the power operator whether afloat or ashore. Copy may be obtained by addressing the Diamond Power Specialty Corp., Detroit.

STEEL HARDENING—A folder by the Stanley P. Rockwell Co., Hartford, Conn., describes its method for determining the critical temperature of steel being given hardening treatment, to insure quenching at the proper moment.

SAFETY DEVICES—Goggles, masks and shields to protect eyes and faces from injury in industrial operations are illustrated and described in a bulletin by the Boyer-Campbell Co., Detroit. An effective picture showing how goggles saved a pair of eyes adorns the first page.

ELECTRIC DRAWING FURNACE—Leeds & Northrup Co., manufacturers of electrical measuring instruments, Philadelphia, has issued a booklet explaining correct methods of drawing steel to obtain best qualities and describes its electric furnace for this purpose and method of using it.

SPEED REDUCERS AND GEARS—D. O. James Mfg. Co., Chicago, manufacturer of gears, speed reducers and couplings, has issued a new catalog covering its complete line. It is well illustrated and has many pages of engineering data which are of interest to engineers, designers and purchasers of transmission equipment. It is of much value in determining proper type of elevating, conveying, power transmitting and process machinery.

LEVEL AND PRESSURE INDICATORS—Republic Flow Meters Co., Chicago, has issued a pamphlet describing electrical level and pressure indicators and recorders, which can be used for long distance supervision. The instruments can be used either on gas, water or other fluids.

STEAM SPECIALTIES—Water columns and gages, gage cocks, electric alarms and two-whistle valves for use on boilers are given full description and illustration in a catalog by the Reliance Gauge Column Co., Cleveland. The catalog is unusually complete in description, illustration and data.

STEAM PURIFIER—A reprint of a paper on the removal of water and physical impurities from steam leaving a boiler is being circulated by the Andrews-Bradshaw Co., Pittsburgh. It deals with the physical side of steam production for power purposes, which the author believes is less thoroughly understood than the chemical.

JUNCTION BOXES—The Crouse-Hind Co., Syracuse, N. Y. has published several bulletins describing a variety of junction boxes for use in electrical work. The boxes are made of cast iron, the covers being made of cast brass and threaded. Two bosses on the cover permit the use of a wrench or screw driver in turning it. Dimensions are given.

CUTTING AND WELDING APPARATUS—Equipment used in cutting and welding, including torches and outfits, regulators, acetylene generators, portable trucks, adaptors, manifolds, oil preheaters, carbide lights, welding rods and flux, are described and illustrated in a recent publication of the Alexander Milburn Co., Baltimore.

GRINDERS—Norton Co., Worcester, Mass., has issued a booklet on grinding wheel stands and accessories. The descriptions of mortor and belt driven stands are given with tables of the various sizes manufactured. It also includes protection and dust hoods.

BLOWERS—P. H. & F. M. Roots Co., Connersville, Ind., has issued a 15-page bulletin describing low pressure rotary blowers. The history and operating principle of this type of blower are given. Several tables giving sizes and capacities are contained in the bulletin.

DETROIT UNDERFED STOKERS of the single retort type are described in a new and attractive 32-page bulletin just issued Among other items of outstanding interest to combustion engineers, the bulletin contains a number of fuel bed cross sections showing conditions of the fire with respect to air distribution and movement toward the dumps. One section is devoted to the application of the stoker to both low and high set boilers. Another section shows how twin settings serve very large boilers. Copies of this bulletin, number 1018, are available upon application to the Detroit Stoker Co., General Motors building, Detroit.

Business News for the Marine Trade

Curtis Marine Service Co., Biloxi, Miss., has been incorporated with $50,000 capital by Louis E. Curtis and Niles Mosely.

R. F. Daly has been incorporated at Wilmington, Del., for $50,000 to act as ship owner.

Panama Mail Steamship Co., Dover, Del., has been incorporated with $3,000,000 capitalization to own and operate vessels.

All the properties of the Downey Shipbuilding Corp. at Arlington, S. I., New York, will be sold at foreclosure on July 15, the sale to be conducted by Joseph P. Day, Inc., auctioneers. The plants to be sold comprise one of the largest waterfront properties within the free lighterage limits of New York harbor and have been appraised at more than $2,000,000. Buildings on the properties include plate shop, beam shop, rivet and pipe shop, machine shop, power plant, etc.

Payne Shipping Co. has been incorporated in Delaware with $10,000 capital.

Lake Charles & Gulf Transportation Co., Inc., Lake Charles, La., has been incorporated with $10,000 capital. A. A. Nelson, 1750 Madison street, is secretary.

Marine Producing Corp. has been incorporated at Buffalo, with $500,000 capital by F. G. Hengerer, O. Orange and R. A. Fancher. H. E. Webster, Buffalo, is attorney.

Kahlenberg Bros. Co., Two Rivers, Wis., manufacturer of marine engines, has let a contract for a 1-story brick and steel plant addition, 85 x 105 feet.

Oceanic Stevedoring Co., of Louisiana, Inc., has been incorporated with $10,000 capital by John H. Joedan, 2036 Octavia street, and Arthur B. Donaldson, 1435 Harmony street, New Orleans.

Westego Canal & Terminal Co., Inc., New Orleans, has been incorporated with $250,000 capital by William T. Nolan, 2707 Coliseum street and U. Marinoni, 2719 Coliseum street.

Indiana-Belfont Transportation Co., Ironton, O., has been incorporated with $200,000 capital to operate a line of boats on the Ohio river, by I. P. Blanton, John Brown, Charles Horn, W. Von Bremen and T. L. Zimmerman Jr.

Tri-City Ferry Co., 715 Ohio street, Cairo, Ill., has been incorporated with $15,000 capital to operate a ferry line, by J. I. Dunn, Herman Weber and David S. Lansdem, 614 Commercial avenue, Cairo.

Edgar L. Hocking, New York, has been incorporated to manufacture pleasure craft, with $20,000 capital, by E. L. Hocking, G. Hocking, and R. Cuthbert. A. E. Amsler, Richmond Hill, N. Y., is attorney.

Buckhout Boat Corp., Poughkeepsie, N. Y., has been incorporated with 100 shares no par value by J. E. Buckhout, J. R. Schalk and H. B. Vosburgh. C. W. H. Arnold, Poughkeepsie, is attorney.

Los Angeles Propeller Co., Los Angeles, a recent incorporation, is manufacturing propellers and will shortly add other articles to its output. A foundry is to be erected. George W. Morrow is manager.

S. & B. Towboat Co., Alexandria, La., has been incorporated with $10,000 capital by Edward S. Bres, 2413 Nashville avenue, New Orleans, and others.

Stovall Navigation Co., Monroe, La., has been incorporated with $100,000 capital by Fred Stovall, 407 Louisville avenue, and others.

Coastwise Navigation Co., Jersey City, N. J., has been incorporated with 1000 shares no par value to operate steamships by Eugene McKernan, Brooklyn, N. Y.; Alan J. Collins and J. Bradford Wardwell, Stamford, Conn. Corporation Trust Co., Jersey City, is attorney.

Suwannee River Navigation Co., Gainesville, Fla., has been organized to operate boats between Cedar Key and Branford, for passenger and freight service. W. M. Fowler is president and A. D. Ware, secretary.

Sabine Stevedoring Co., Beaumont, Texas, has been incorporated by N. S. Storter, 2424 Liberty street.

C. G. Laird & Co., Norfolk, Va., has been incorporated with $50,000 capital to do stevedoring, by Everett E. Ellis, Brokers Exchange building.

Superior Shipbuilding Co., Superior, Wis., is investing $50,000 in improvements and extensions to its yards.

Hill-Diesel Engine Co., Lansiing, Mich., successor of the Bates & Edmond Co., has received an order from the government for 15 diesel engines, which are to be insalled in light government patrol boats.

Matson Navigation Co. will erect $2,000,000 hotel in Honolulu, Hawaii. Charles D. Wetmore, New York, architect.

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